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Municipal Waste Combustion Multipollutant Study Emission Test Report. Maine Energy Recovery Company Refuse Derived Fuel Facility, Biddeford, Maine Volume 2. Appendices A-F

Midwest Research Inst., Kansas City, MO

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Municipal Waste Combustion Multipollutant Study

Emission Test Report

Maine Energy Recovery Company Refuse Derived Fuel Facility Biddeford, Maine

Volume II: Appendices A-F

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RESEARCH TRIANGLE PARK, NC 27711

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16. ABSTRACT The report gives results of an emission test of a new municipal solid waste combustor, in Biddeford, ME, that burns refuse-derived fuel and is equipped with a lime spray dryer fabric filter (SD/FF) emission control system. Control efficiency of the SD/FF emission control system was measured for polychlorinated dibenzodioxins (PCDD), polychlorinated dibenzofurans (PCDF), particulate matter (PM), cadmium (Cd), chromium (Cr), arsenic (As), lead (Pb), mercury (Hg), sulfur dioxide (SO2), and hydrogen chloride (HCl). Additional continuous monitoring was conducted for oxygen (O2), carbon dioxide (CO2), carbon monoxide (CO), nitrogen oxides (NOx), and total hydrocarbons (THC). Average emissions of total PCDD were 290 ng/dscm (uncontrolled) and 1.3 ng/dscm (controlled). Total PCDF emissions were 590 ng/dscm (uncontrolled) and 2.9 ng/dscm (controlled). Control efficiency was about 99.5% for both dioxins and furans. Particulate emissions averaged 7400 mg/dscm (uncontrolled) and 33 mg/dscm (controlled), for an average particulate control efficiency of 99.5%. Metals emissions varied from 500 micrograms/dscm for As and Hg to 30,000 micrograms/dscm for Pb (uncontrolled), and from 6 micrograms/dscm for As and Cr to 160 micrograms/dscm for Pb (controlled). Metals control efficiencies varied from 98.2% for Hg to 99.8% for Cr.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group	
Pollution	Fabrics	Pollution Control	13B	11E
Emission	Spray Drying	Stationary Sources	14G	07A, 13H
Refuse	Calcium Oxide	Municipal Waste Combustion		07B
Wastes				
Combustion		Refuse Derived Fuel	21B	
Filters		Fabric Filters		

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NOTICE

This document has been reviewed in accordance with U.S. Environmental Protection Agency policy and approved for publication. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

ABSTRACT

This report describes the results of an emission test of a new municipal solid waste combustor which burns refuse-derived fuel and which is equipped with a lime spray dryer fabric filter (SD/FF) emission control system. The facility tested is operated by the Maine Energy Recovery Company and is located in Biddeford, Maine.

Control efficiency of the SD/FF emission control system was measured for polychlorinated dibenzodioxins (PCDD), polychlorinated dibenzofurans (PCDF), particulate matter (PM), cadmium (Cd), chromium (Cr), arsenic (As), lead (Pb), mercury (Hg), sulfur dioxide (SO_2), and hydrogen chloride (HCl). Additional continuous monitoring was conducted at various locations for oxygen (O_2), carbon dioxide (CO_2), carbon monoxide (CO), nitrogen oxides (NO_x), and total hydrocarbons (THC). Process samples were also collected and analyzed for metals and selected physical properties.

Average emissions of total PCDD were 290 ng/dscm (0.1×10^{-6} gr/dscf) (uncontrolled) and 1.3 ng/dscm (5.7×10^{-10} gr/dscf) (controlled). Total PCDF emissions were 590 ng/dscm (0.3×10^{-6} gr/dscf) (uncontrolled) and 2.9 ng/dscm (1.3×10^{-9} gr/dscf) (controlled). The control efficiency was about 99.5% for both dioxins and furans. All of the above results are corrected to 12% CO_2. The 17 specific PCDD/PCDF isomers, as well as the tetra through octa chlorinated total congeners, showed no significant change in distribution across the control device.

Uncontrolled particulate emissions averaged 7,400 mg/dscm (3.23 gr/dscf), and controlled particulates averaged 33 mg/dscm (0.01 gr/dscf) (corrected to 12% CO_2) for an average particulate control efficiency of 99.5%.

Metals emissions (uncontrolled) varied from 500 µg/dscm for arsenic and mercury to 30,000 µg/dscm for lead. Controlled metals emissions varied from 6 µg/dscm for arsenic and chromium to 160 µg/dscm for lead. Metals control efficiencies varied from 98.2% for mercury to 99.8% for chromium. The process ash sample results were in general agreement with the concentrations measured in the stack samples.

The continuous monitoring results and process data logging indicated that the combustion process was never under optimum operating conditions. There were frequent problems with feeder conveyors during all three test runs. CO concentrations averaged 70 ppm with some short duration excursions above 200 ppm.

The automatic SD/FF control system was not operating during these tests. During the first test, the stoichiometric lime-to-HCl + SO_2 ratio was 1.7, which resulted in an SO_2 removal efficiency of 66% and an HCl removal efficiency of 98%. During the early stages of the second test, the lime feed rate was doubled to give a stoichiometric ratio of 3.4. During the third test the stoichiometric ratio was 3.9 and removal efficiencies were improved to 90% for SO_2 and 99.4% for HCl.

This report was submitted in fulfillment of Contract 68-02-4463, Work Assignment No. 2 and Contract 68-02-4395, Work Assignment No. 27 by Midwest Research Institute under the sponsorship of the U.S. Environmental Protection Agency. This report covers tests performed during the period from December 8 to 12, 1987. Project work was completed as of May 1, 1988.

CONTENTS

Page

Volume II
Appendices

A. Sample calculations.. A-1
B. Process data.. B-1
    Full-size plots of key operating data.................. B-2
    Printouts of 4-min readings............................ B-21
C. Semivolatile organics (dioxin/furan) MM5 field data........... C-1
    Run No. 1 spray dryer inlet............................ C-2
    Run No. 1 baghouse outlet.............................. C-13
    Run No. 2 spray dryer inlet............................ C-24
    Run No. 2 baghouse outlet.............................. C-36
    Run No. 3 spray dryer inlet............................ C-48
    Run No. 3 baghouse outlet.............................. C-60
D. Particulate/metals MM5 field data and carbon dioxide/oxygen M3 field data................................ D-1
    Run No. 1 spray dryer inlet............................ D-2
    Run No. 1 baghouse outlet.............................. D-13
    Run No. 2 spray dryer inlet............................ D-24
    Run No. 2 baghouse outlet.............................. D-36
    Run No. 3 spray dryer inlet............................ D-48
    Run No. 3 baghouse outlet.............................. D-59
    M3 sampling and Orsat analysis......................... D-70
    Preliminary velocity traverse data..................... D-83
    Proof/blank trains set-up/recovery..................... D-86
E. Ash, lime slurry, and RDF field data........................ E-1
    Baghouse ash... E-2
    Cyclone ash.. E-18
    Bottom ash... E-28
    Refuse-derived fuel.................................... E-36
    Lime slurry.. E-40
F. CEM data.. F-1
    Summary tables and concentration plots................. F-2
    Run 1--spray dryer inlet, spray dryer outlet (midpoint), baghouse outlet........................... F-36
    Run 2--spray dryer inlet, spray dryer outlet (midpoint), baghouse outlet........................... F-91
    Run 3--spray dryer inlet, spray dryer outlet (midpoint), baghouse outlet........................... F-163
Table of conversion factors................................... F-236

APPENDIX A

SAMPLE CALCULATIONS

PCDD/PCDF and Particulate Metals Sampling

The following section outlines the calculations found on the MM5 summary sheets (Appendices C and D). Run 1, semivolatiles train, inlet location (uncontrolled), will be used in the example. Formulas, constants, etc., for these calculations are taken from the *Federal Register* for EPA Method 5, except where noted otherwise. Slight variations in numerical values from those on the MM5 summary sheets are the result of computer rounding and/or decimal carryover by the MM5 summary computer program.

Parameter	Source
Initial meter volume	Raw data
Final meter volume	Raw data
Meter factor	Raw data
Net meter volume	Calculation No. 1
Gas volume	Calculation No. 2
Barometric pressure	Raw data
Static pressure	Raw data
Percent oxygen	Raw data
Percent carbon dioxide	Raw data
Moisture collected	Raw data
Percent water	Calculation No. 3
Average meter temperature	Calculation No. 4
Average ΔH	Calculation No. 5
Average ΔP	Calculation No. 6
Average stack temperature	Calculation No. 7
Dry molecular weight	Calculation No. 8
Wet molecular weight	Calculation No. 9
Average square root of ΔP	Calculation No. 10
% Isokinetic	Calculation No. 11
Pitot coefficient	Raw data
Sampling time	Raw data
Nozzle diameter	Raw data
Stack axis No. 1	Raw data
Stack axis No. 2	Raw data
Stack area	Calculation No. 12
Stack velocity	Calculation No. 13
Flow rate (acfm)	Calculation No. 14
Flow rate (wet, scfm)	Calculation No. 15
Flow rate (dry, scfm)	Calculation No. 16

1. Net Meter Volume

$$\text{Net} = (\text{Final} - \text{initial}) * \text{meter factor}$$

$$= (12.145 \text{ m}^3 - 10.183 \text{ m}^3) * 1.023$$

$$= 2.008 \text{ m}^3 \ (70.904 \text{ ft}^3)$$

2. Gas Volume

$$Vm_{STD} = K_1 \ Vm \left(\frac{Pb + \frac{\Delta H}{13.6}}{Tm} \right)$$

Vm_{STD} = Dry gas volume, dscm

K_1 = Correction constant, 0.3858°K/mm Hg

Vm = Net meter volume, scm

Pb = Barometric pressure, mm Hg

ΔH = Average ΔH, mm H_2O (calculation No. 5 shows averaging)

Tm = Average meter temperature (calculation No. 4 shows averaging), °K

$$Vm_{STD} = (0.3858^\circ\text{K/mm Hg})\ (2.008 \text{ m}^3)\ \frac{758 + \frac{14.6}{13.6}}{(38 + 273)}$$

$$Vm_{STD} = 1.891 \text{ dscm } (66.781 \text{ dscf})$$

3. Percent Water

Volume of water vapor = (Std. vapor density of water) * (liquid volume)

$$Vw_{STD} = (0.001333 \text{ m}^3/\text{mL})\ (237.2 \text{ mL})$$

$$Vw_{STD} = 0.316 \text{ scm}$$

$$\text{Moisture content of gas} = \frac{\text{Water fraction}}{\text{Total}} \times 100$$

$$= \left(\frac{0.316 \text{ scm}}{1.891 \text{ dscm} + 0.316 \text{ scm}} \right) \times 100$$

Percent water = 14.3%

4. Average Meter Temperature

$$Tm = \frac{\Sigma \text{ All } \Delta H \text{ readings}}{\text{Total number of readings}} = 100^\circ F$$

Conversion °F to °C

$^\circ C = (^\circ F - 32) \times 5/9 = 38^\circ C$

5. Average ΔH

$$\Delta H = \frac{\Sigma \text{ All } \Delta H \text{ readings}}{\text{Total number of readings}} = 0.57 \text{ in. } H_2O$$

Conversion in. H_2O to mm H_2O

mm H_2O = (in. H_2O) x 25.4 mm/in. = 14.6 mm H_2O

6. Average ΔP

$$\Delta P = \frac{\Sigma \text{ All } \Delta P \text{ readings}}{\text{Total number of readings}} = 1.023 \text{ in. } H_2O$$

Conversion from in. H_2O to mm H_2O is identical to that of calculation No. 5 above.

$$\Delta P = 26.0 \text{ mm } H_2O$$

7. Average Stack Temperature

$$Ts = \frac{\Sigma \text{ All stack temperatures}}{\text{Total number of readings}} = 371^\circ F$$

Conversion from °F to °C is identical to that of calculation No. 4 above.

$$Ts = 188^\circ C$$

8. Dry Molecular Weight (as per EPA Method 3)

Md = (Fraction CO_2 x molecular wt. CO_2)
+ (Fraction O_2 x molecular wt. O_2)
+ (Remaining fraction* x molecular wt. of remaining fraction*)

Md = (0.109 x 44) + (0.086 x 32) + ((1 - 0.109 - 0.086) x 28)
Md = 30.09

9. Wet Molecular Weight

Ms = (Md x dry fraction) + (wet fraction x mol. wt. H_2O)

Ms = (30.09 x (1 - 0.143)) + (0.143 x 18)

Ms = 28.36

10. Average Square Root of ΔP

$$\sqrt{\Delta P} = \frac{\Sigma \text{ Individual } \sqrt{\Delta P}\text{ 's}}{\text{Total number of readings}} = 1.0090 \text{ in. } H_2O$$

$$= 5.0851 \text{ mm } H_2O$$

11. % Isokinetic

$$I = \frac{Ts \; Vm_{STD} \; P_{STD} \; 100}{T_{STD} \; vs \; \theta \; An \; Ps \; (1 - Bws)}$$

where: Ts = Avg. stack temperature, °K (calculation No. 7)

Vm_{STD} = Dry gas volume, dscm (calculation No. 2)

P_{STD} = Standard absolute pressure, 760 mm Hg

T_{STD} = Standard absolute temperature, 293°K

vs = Stack gas velocity, m/min (calculation No. 13)

θ = Sampling time, min

An = Cross-sectional area of nozzle, m²

Ps = Absolute stack gas pressure, mm Hg

Bws = Fraction of water vapor in gas stream (calculation No. 3)

---

* Remaining fraction considered to be N_2 and CO, both with molecular weight of 28.

$$An = \frac{\pi}{4} \text{(diameter of nozzle)}^2$$

$$An = \frac{\pi}{4} (4.65 \times 10^{-3} \text{ m})^2$$

$$An = 1.698 \times 10^{-5} \text{ m}^2$$

$$Ps = \text{Barometric pressure} + \frac{\text{Static pressure}}{13.6}$$

$$Ps = 758 \text{ mm Hg} + \frac{-203 \text{ mm Hg}}{13.6}$$

$$Ps = 743 \text{ mm Hg}$$

$$I = \frac{(188 + 273^{\circ}\text{K})\ (1.891 \text{ dscm})\ (760 \text{ mm Hg})\ (100)}{(293^{\circ}\text{K})\ (1{,}320 \text{ m/min})\ (160 \text{ min})\ (1.698 \times 10^{-5} \text{ m}^2)\ (743 \text{ mm Hg})\ (1 - 0.143)}$$

$$\underline{I = 99.0\%}$$

12. Stack Area

For square duct:

$$A = L \times W$$

$$A = (1.27 \text{ m})\ (1.216 \text{ m})$$

$$A = 1.544 \text{ m}^2 \ (16.62 \text{ ft}^2)$$

13. Stack Gas Velocity (as per EPA Method 2)

where: $vs = Kp\ Cp\ (\sqrt{\Delta P})\ \text{avg.} \sqrt{\frac{Ts}{Ps\ Ms}}$

Kp = Constant, $34.97 \frac{\text{m}}{\text{sec}} \left[\frac{(\text{g/gmole})\ (\text{mm Hg})}{(^{\circ}\text{K})\ (\text{mm } H_2O)}\right]^{1/2}$

Cp = Pitot coefficient, dimensionless

$(\sqrt{\Delta P})$ avg = Average square root of ΔP, calculation No. 10

Ts = Average stack temperature, °K, calculation No. 7

Ps = Absolute stack pressure, mm Hg, calculation No. 11

Ms = Wet molecular weight of stack gas, calculation No. 9

$$vs = (34.97)\ (0.84)\ (5.0851\ \text{mm}\ H_2O)\sqrt{\frac{(188 + 273^\circ K)}{(743\ \text{mm Hg})\ (28.36)}}$$

$$vs = 22\ \text{m/sec}$$

or 1,320 m/min (4,330 ft/min)

14. Flow Rate (actual)

$$Q = vs \times A$$

$$Q = (1{,}320\ \text{m/min})\ (1.544\ \text{m}^2)$$

$$Q = 2{,}038\ \text{m}^3\text{/min}\ (71{,}978\ \text{ft}^3\text{/min})$$

15. Flow Rate (wet)

$$Qw = Q\left(\frac{T_{STD}}{Ts}\right)\left(\frac{Ps}{P_{STD}}\right)$$

where: T_{STD} = 293°K

Ts = Avg. stack temperature, calculation No. 7

Ps = Absolute stack pressure, calculation No. 11

P_{STD} = 760 mm Hg

$$Qw = (2{,}038\ \text{m}^3\text{/min})\ \frac{293^\circ K}{188 + 273^\circ K}\ \frac{743\ \text{mm Hg}}{760\ \text{mm Hg}}$$

$$Qw = 1{,}266\ \text{m}^3\text{/min}\ (44{,}717\ \text{ft}^3\text{/min})$$

16. Flow Rate (dry)

$$Q_{STD} = Qw \times \text{mole fraction dry gas}$$

$$Q_{STD} = (1{,}266\ \text{m}^3\text{/min})\ (1 - 0.143)$$

$$Q_{STD} = 1{,}085\ \text{m}^3\text{/min}\ (38{,}308\ \text{ft}^3\text{/min})$$

PCDD/PCDF Analyses

Run 1 uncontrolled is used as an example.

1. Surrogate Recovery

Surrogate recovery = (Area(S)/Area(IS) x (Amt(IS)/RF) x split ratio

where Area(S) = Total area of the method internal standard

Area(IS) = Total area of the recovery internal standard

Amt(IS) = Amount of the recovery internal standard

RF = Response factor of the ^{13}C method internal standard

Split ratio = 1 unless sample is split

^{13}C-2,3,7,8-TCDD

Surrogate recovery = (592,117/1,753,340) x (2.35/1.354) x 1 = 0.586

2. Surrogate recovery % = (Surrogate Recovery/Amt of Surrogate Added) x 100

where Surrogate recovery = See above equation

Amt of surrogate added = Amt of ^{13}C method internal standard

^{13}C-2,3,7,8-TCDD

Surrogate recovery % = (0.586/1.25) x 100 = 46.9

3. Amount in sample (ng) = (Area(S)/Area(IS) x amt(IS)/RF)

where Area(S) = Total area of sample analyte

Area(IS) = Total area of corresponding method internal standard

Amt(IS) = Amt of ^{13}C method internal standard

RF = Response factor of sample

2,3,7,8-TCDD

Amt in sample (ng) = (69,991,667/592,117 x 1.25/2.367) = 62.4

4. ng/dscm

where ng = Amt in sample

dscm = Dry standard cubic meters = amt of gas sampled

Other 2,3,7,8-TCDD

61.03/1.89 = 32.29 ng/dscm

5. ng/dscm normalized to 12% CO_2

ng/dscm = See above equation

Normalized to 12% CO_2 = 12/amt of CO_2 in stack

Other 2,3,7,8-TCDD

32.29 ng/dscm x (12/10.9) = 35.55

Metals Analyses

Run 1 uncontrolled arsenic is used as an example.

1. µg/dscm

µg = Total micrograms in sample

dscm = Dry standard cubic meters

$$\frac{871.02}{1.89} = 461\ \mu g/dscm$$

2. g/h

$$g/h = (\mu g/dscm)(dscfm \times 0.02832) \times 60\ min/\mu g$$

where µg/dscm = Micrograms/dry standard cubic meter

dscfm = Dry standard cubic feet per minute

0.02832 = Conversion from dscf to dscm

60 min = Converts to 1 h

µg = 1,000,000

$$\frac{(461)(41{,}500 \times 0.02832)(60)}{1{,}000{,}000} = 57\ g/h$$

3. µg Metal/g of particulate

where µg Metal = Micrograms in sample

grams of particulate = Grams collected in M5 train

$$\frac{871.02}{13.966} = 62.4\ \mu g\ metal/g\ of\ particulate$$

CEM Calculations

Run 1, inlet CO used as the example.

For each channel, the average zero and average ent span are calculated.

$$\text{Zero}_{\text{avg}} = \frac{\text{Initial zero + final zero}}{2} \qquad \frac{2.30 + 0.28}{2} = 1.29$$

$$\text{Span}_{\text{net}} = \frac{\text{Initial span + final span}}{2} - \text{Zero}_{\text{avg}} \qquad \frac{52.09 + 50.19}{2} - 1.29 = 49.85$$

For the linear response analyzers (O_2, THC, NO_x, and SO_2), the concentration is:

$$\text{Concentration} = \frac{\text{reading - zero}_{\text{avg}}}{\text{Span}_{\text{net}}} \times \text{span concentration}$$

$$\text{15:30 } O_2 \text{reading} = \frac{36.93 - 1.395}{56.76} \times 14.01 = 8.77\%\ O_2$$

For nonlinear CO_2 and CO, the manufacturers linearity equation is also needed:

For CO_2

$$\text{Conc} = 0.0459 + 0.03765 \times R_n + 0.001396 \times R_n^2$$

For CO

$$\text{Conc} = 0.443188 + 19.8082 \times R_n + 0.234639 \times R_n^2 + 1.49008 \times 10^{-3} \times R_n^3 + 2.16246 \times 10^{-6} \times R_n^4$$

where R_n = Net reading, normalized

$$= \frac{\text{reading - zero}_{\text{avg}}}{\text{Span}_{\text{net}}} \times \text{Span}_c$$

Span_c = % of full scale the standard would correspond to on the calibration curve (solved by successive approximation)

$$\text{15:30 } CO_2 \text{ reading} = R_n = \frac{(77.09 - 1.58)}{79.94} \times 80.03 = 75.60$$

$$\text{Conc} = 0.0459 + 0.03765 \times 75.60 + 0.001396 \times 75.60^2 = 10.87\%\ CO_2$$

For CO readings, a final calculation must be made to correct for the CO_2 absorbed by the ascarite cartridge.

$$\text{CO conc} = (0.443188 + 19.8082 \times R_n + 0.234639 \times R_n^2 + 1.49008 \times 10^{-3} \times R_n^3 + 2.16246 \times 10^{-6} \times R_n^4)$$

$$\times \frac{(100 - CO_2 \text{ conc})}{100}$$

$$\text{15:30 CO reading} = R_n = \frac{(13.49 = 1.29)}{49.85} \times 14.37 = 3.52$$

$$\text{Conc} = 0.443 + 19.8082 \times 3.52 + 0.234639 \times 3.52^2 + 1.49008 \times 10^{-3} \times R_n^3$$

$$+ 2.16246 \times 10^{-6} \times R_n^4 \times \frac{(100 - 10.87)}{100}$$

$$= 64.8 \text{ ppm CO}$$

Molar Ratio of Actual Lime to Stoichiometric Lime for HCl and SO_2

Sample Calculation

Run 1 uncontrolled used as an example.

Actual lime = gal/min x % CaO/100 x 3.8 L/gal x sp gr x 1,000 g/min

where gal/min = Lime slurry feedrate in gallons per minute

% CaO = percent of calcium oxide found in lime slurry

sp gr = specific gravity measured in g/mL

3.8 L/gal = conversion factor from gallons to liters

1,000 = conversion factor from liters to milliliters

Stoichiometric Lime

For HCl = (m^3/min x mole/24.1 L x 1/1,000 x 56.08)(ppm HCl/2)

For HCl + SO_2 = (m^3/min x mole/24.1 L x 1/1,000 x 56.08) (ppm HCl/2) + ppm SO_2

where m^3/min = Inlet gas flow rate in dscmm

mole/24.1 L = Molar volume at 20°C and 760 mm Hg

1/1,000 = Conversion from m^3/min to L/min

56.08 = Molecular weight of CaO

ppm HCl = Average amount measured in stack

ppm SO_2 = Average amount measured in stack

Actual Lime

2.91 gal/min x 11.84% x 3.8 L/gal x 1.131 x 10 = 1,481

Stoichiometric

HCl = (1,174.5 m^3/min x mole/24.1 L x 1/1,000 x 56.08 g)(478/2) = 653

HCl + SO_2 = (1,174.5 m^3/min x mole/24.1 L x 1/1,000 x 56.08 g)(478/2 + 83.25) = 879.7

Ratio:

Lime for HCl = $\frac{1,481}{653}$ = 2.27

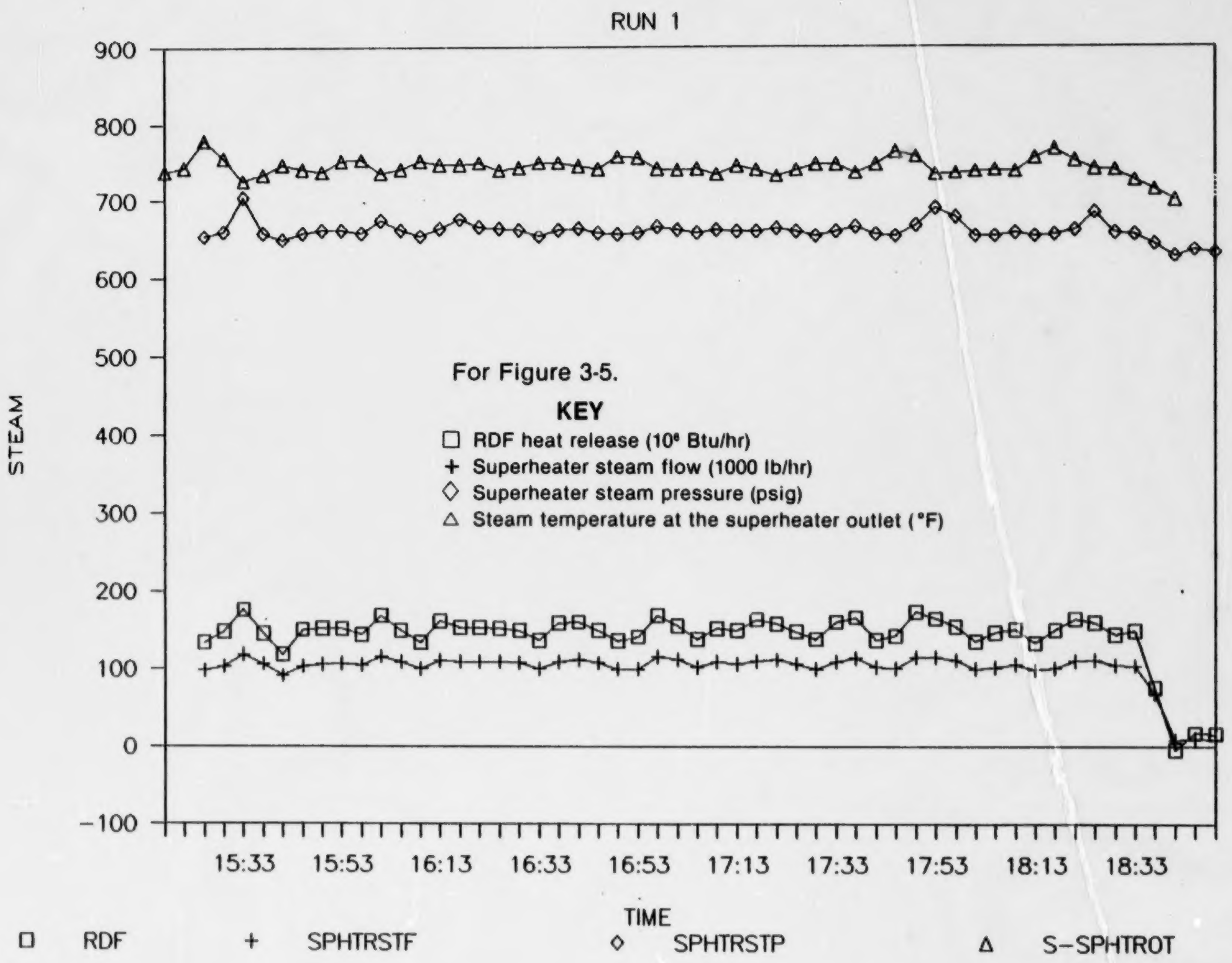
Lime for HCl + SO_2 = $\frac{1,481}{879.7}$ 1.68

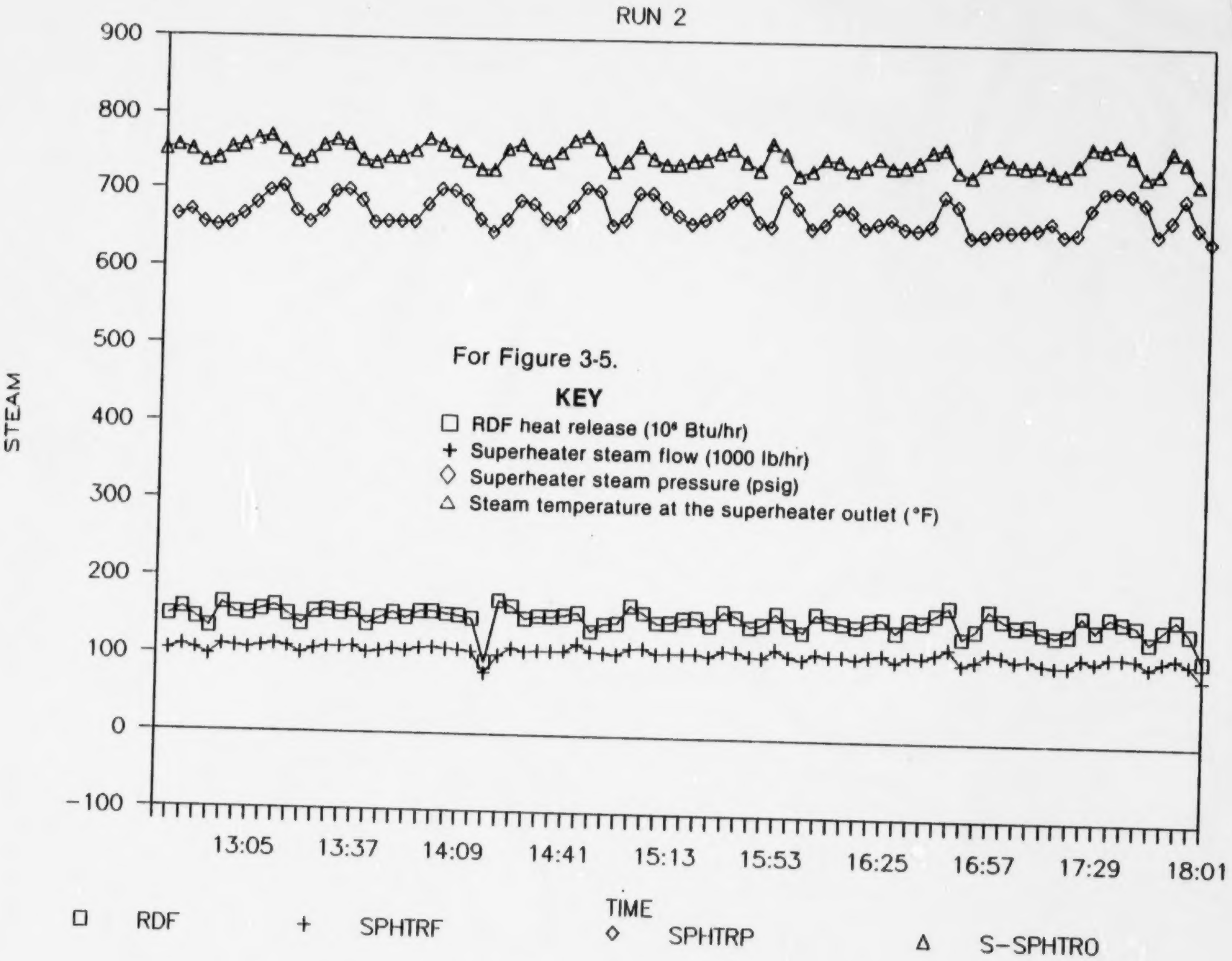
APPENDIX B

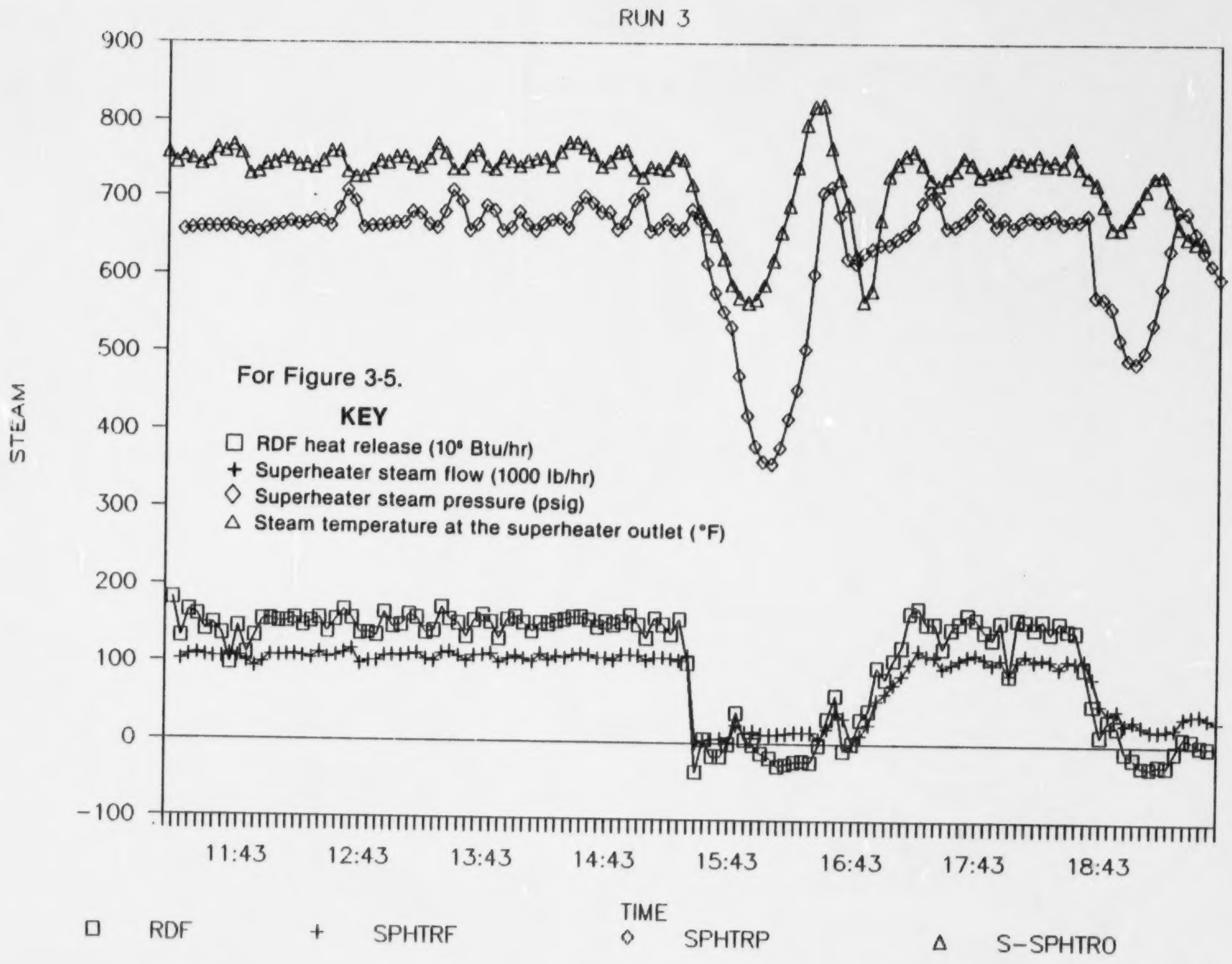
PROCESS DATA

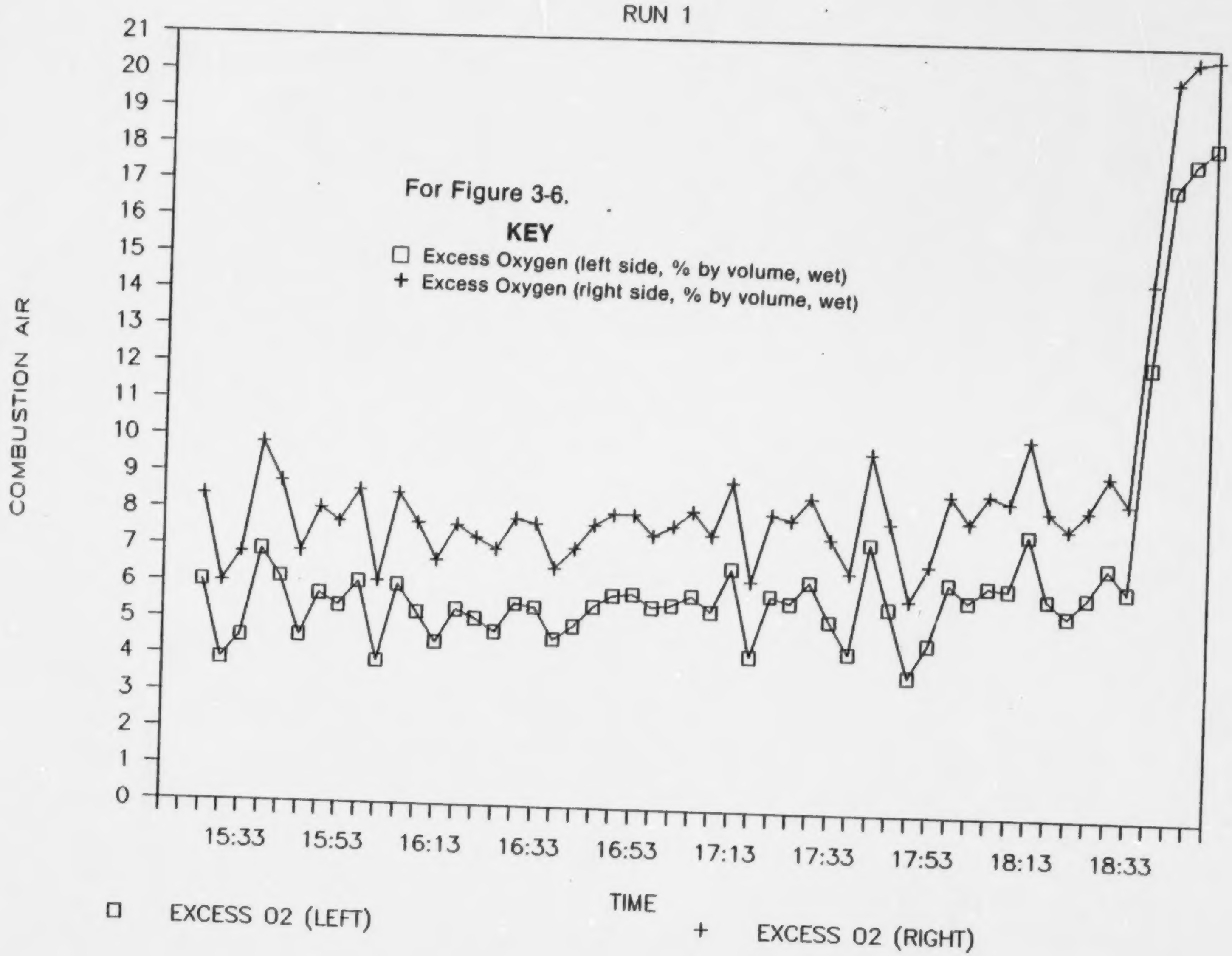
B.1 Full-size Plots of Key Operating Data B-2
B.2 Printouts of 4-min Readings B-21

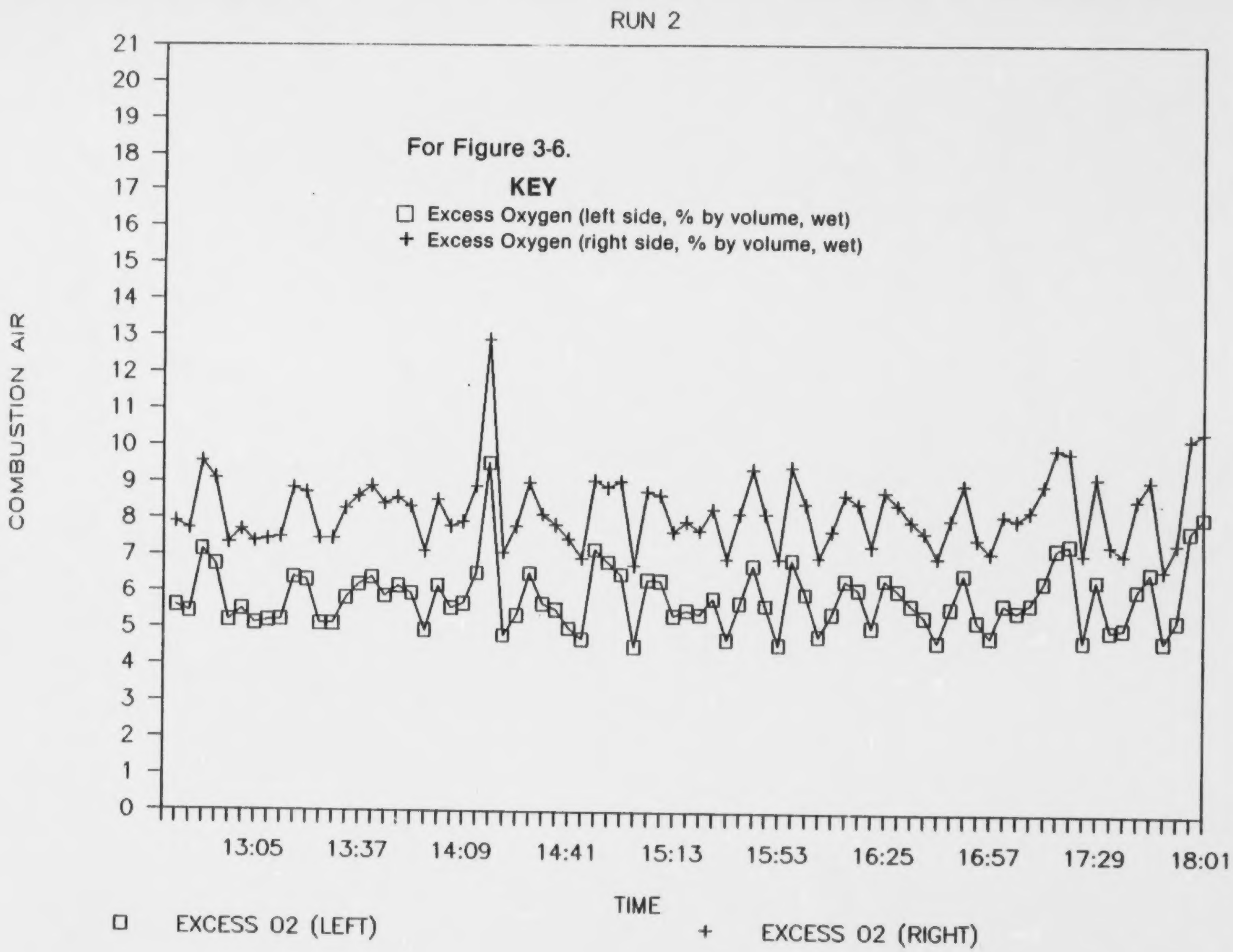
B.1 Full-size Plots of Key Operating Data

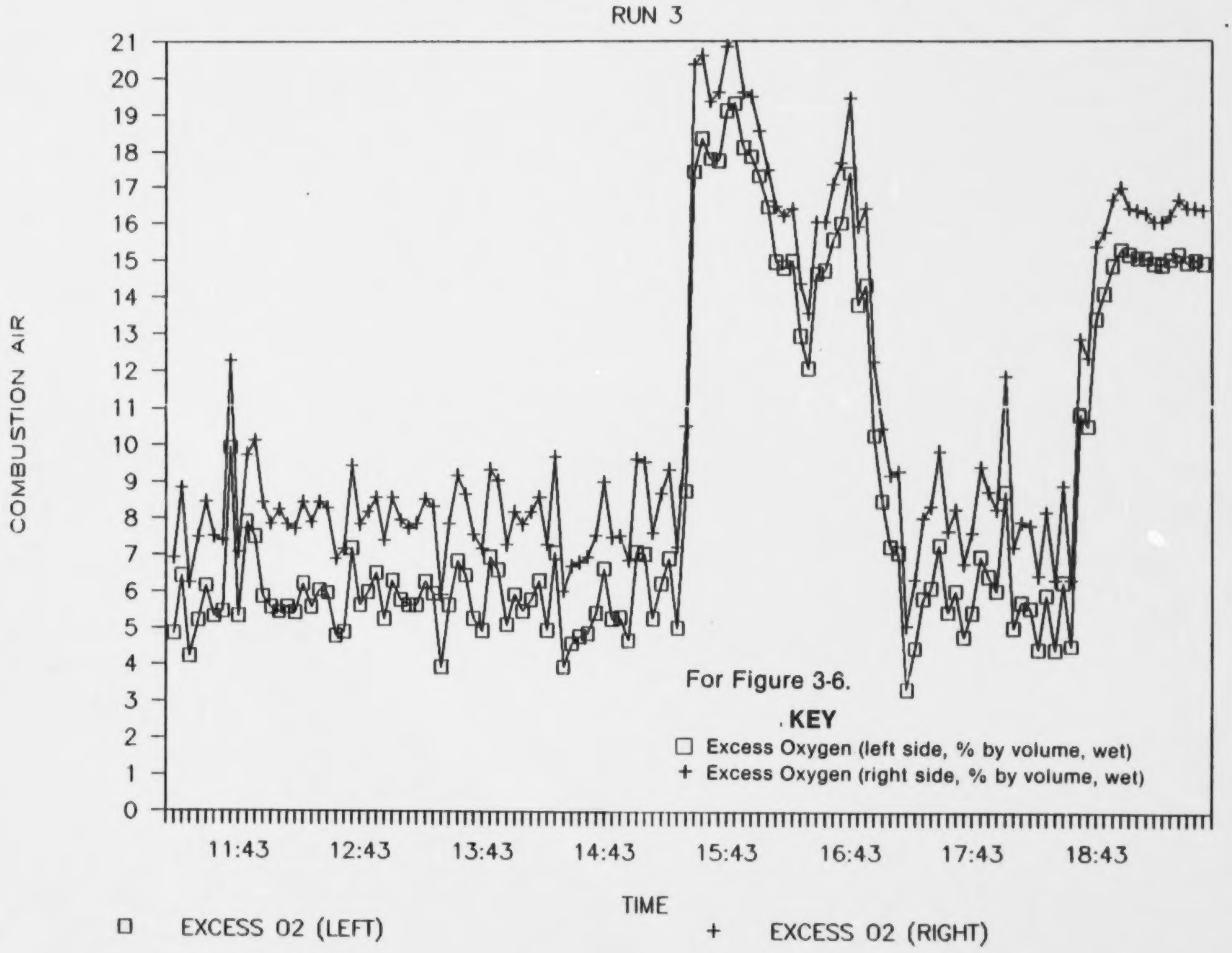

RUN 1
STEAM
900
800
700
600
500
400
300
200
100
0
−100
For Figure 3-5.
KEY
□ RDF heat release (10^6 Btu/hr)
+ Superheater steam flow (1000 lb/hr)
◇ Superheater steam pressure (psig)
△ Steam temperature at the superheater outlet (°F)
15:33
15:53
16:13
16:33
16:53
17:13
17:33
17:53
18:13
18:33
TIME
□ RDF
+ SPHTRSTF
◇ SPHTRSTP
△ S−SPHTROT

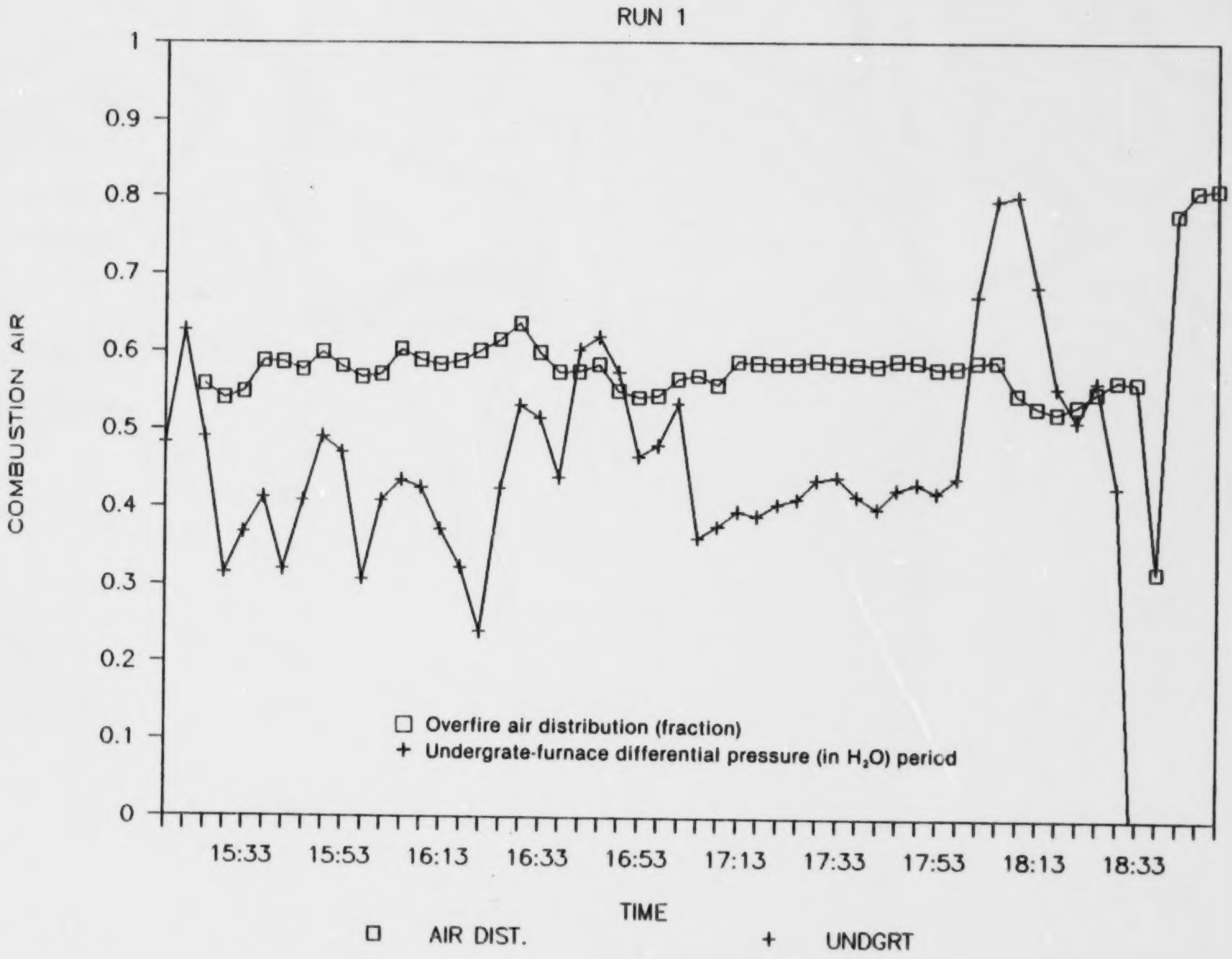

RUN 2
STEAM
900
800
700
600
500
400
300
200
100
0
−100
For Figure 3-5.
KEY
□ RDF heat release (10⁶ Btu/hr)
+ Superheater steam flow (1000 lb/hr)
◇ Superheater steam pressure (psig)
△ Steam temperature at the superheater outlet (°F)
13:05
13:37
14:09
14:41
15:13
15:53
16:25
16:57
17:29
18:01
TIME
□ RDF
+ SPHTRF
◇ SPHTRP
△ S–SPHTRO

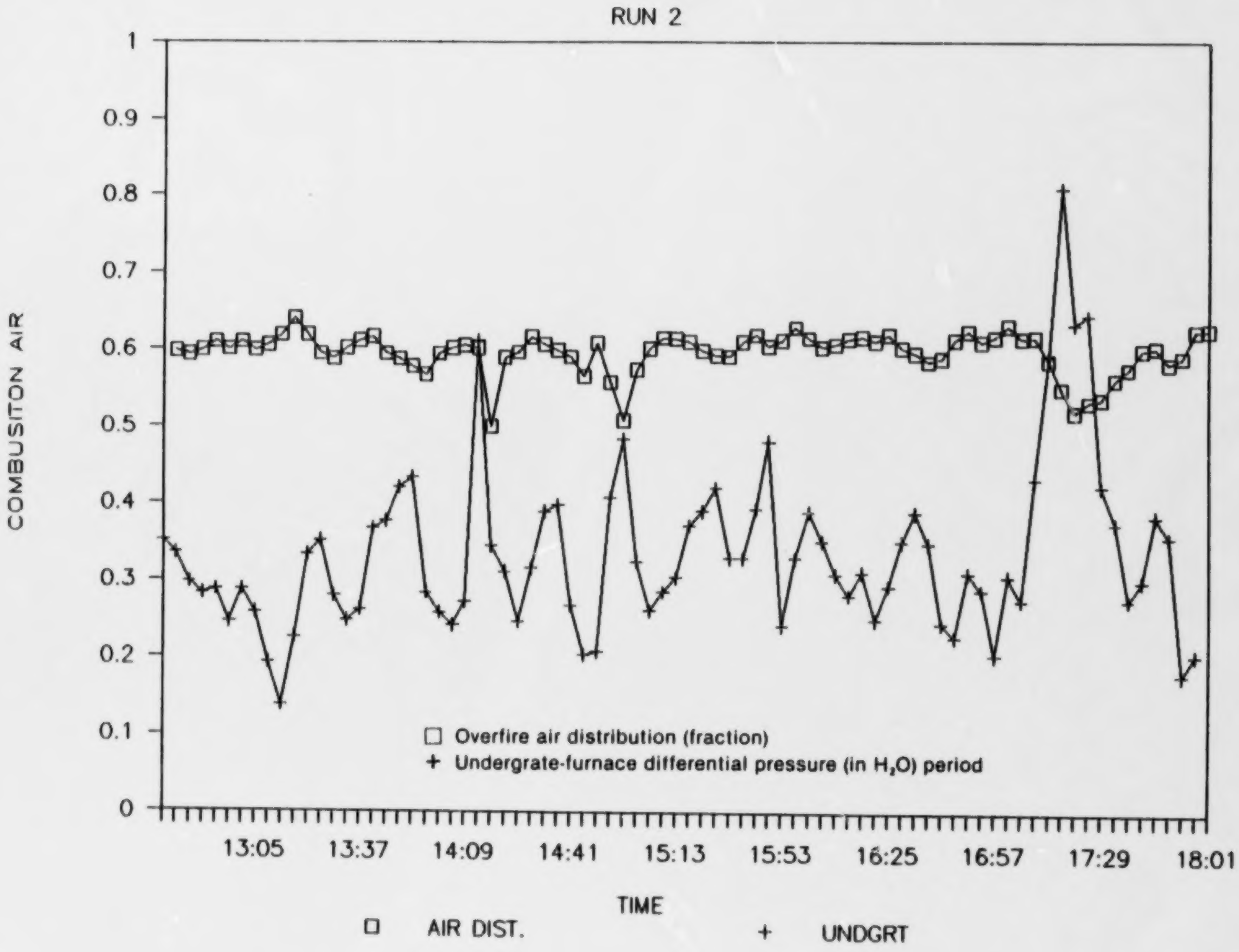

RUN 3
900
800
700
600
500
400
300
200
100
0
−100
STEAM
For Figure 3-5.
KEY
□ RDF heat release (10^6 Btu/hr)
+ Superheater steam flow (1000 lb/hr)
◇ Superheater steam pressure (psig)
△ Steam temperature at the superheater outlet (°F)
11:43
12:43
13:43
14:43
15:43
16:43
17:43
18:43
TIME
□ RDF
+ SPHTRF
◇ SPHTRP
△ S−SPHTRO

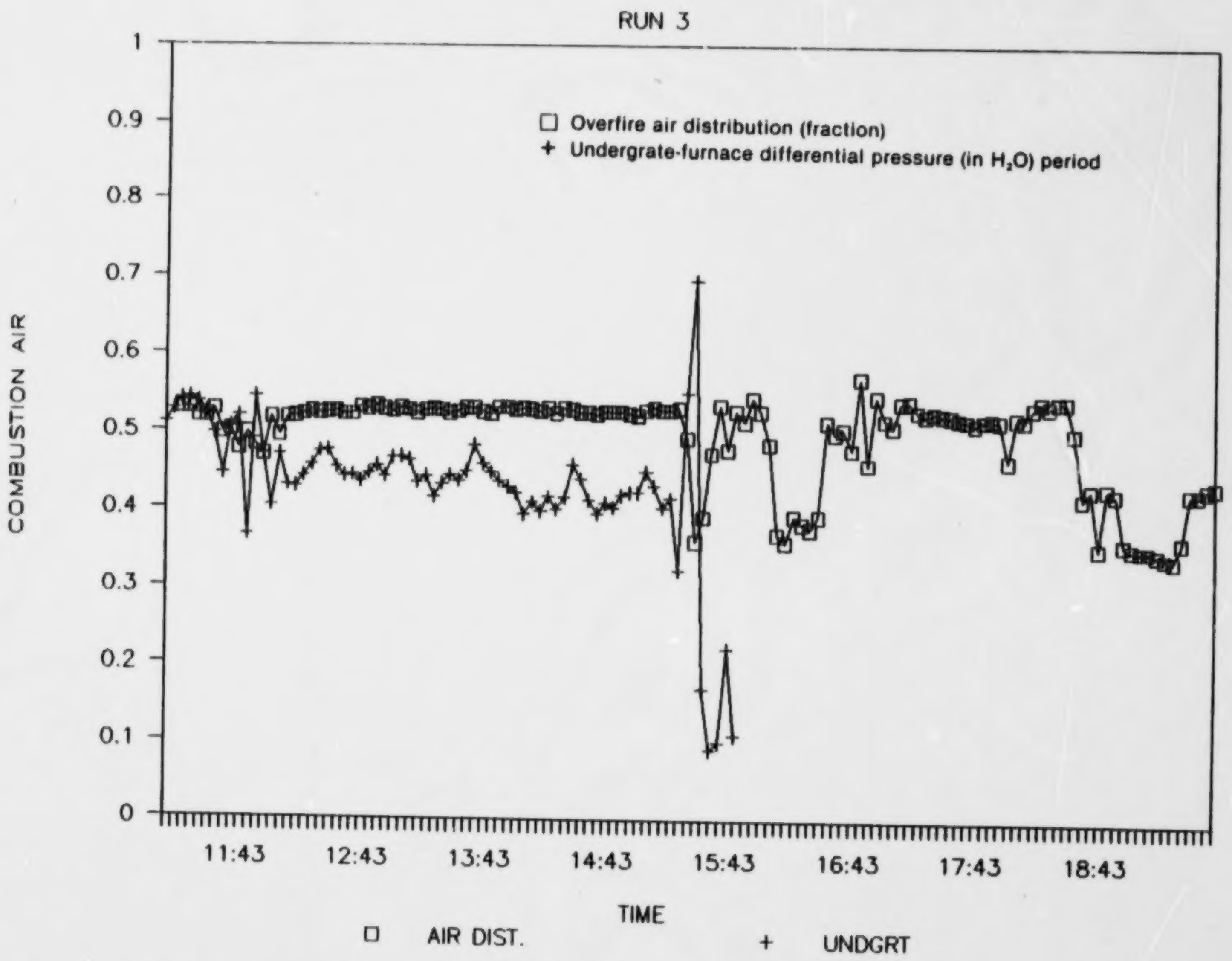

RUN 1
For Figure 3-6.
KEY
□ Excess Oxygen (left side, % by volume, wet)
+ Excess Oxygen (right side, % by volume, wet)
COMBUSTION AIR
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
15:33
15:53
16:13
16:33
16:53
17:13
17:33
17:53
18:13
18:33
TIME
□ EXCESS 02 (LEFT)
+ EXCESS 02 (RIGHT)

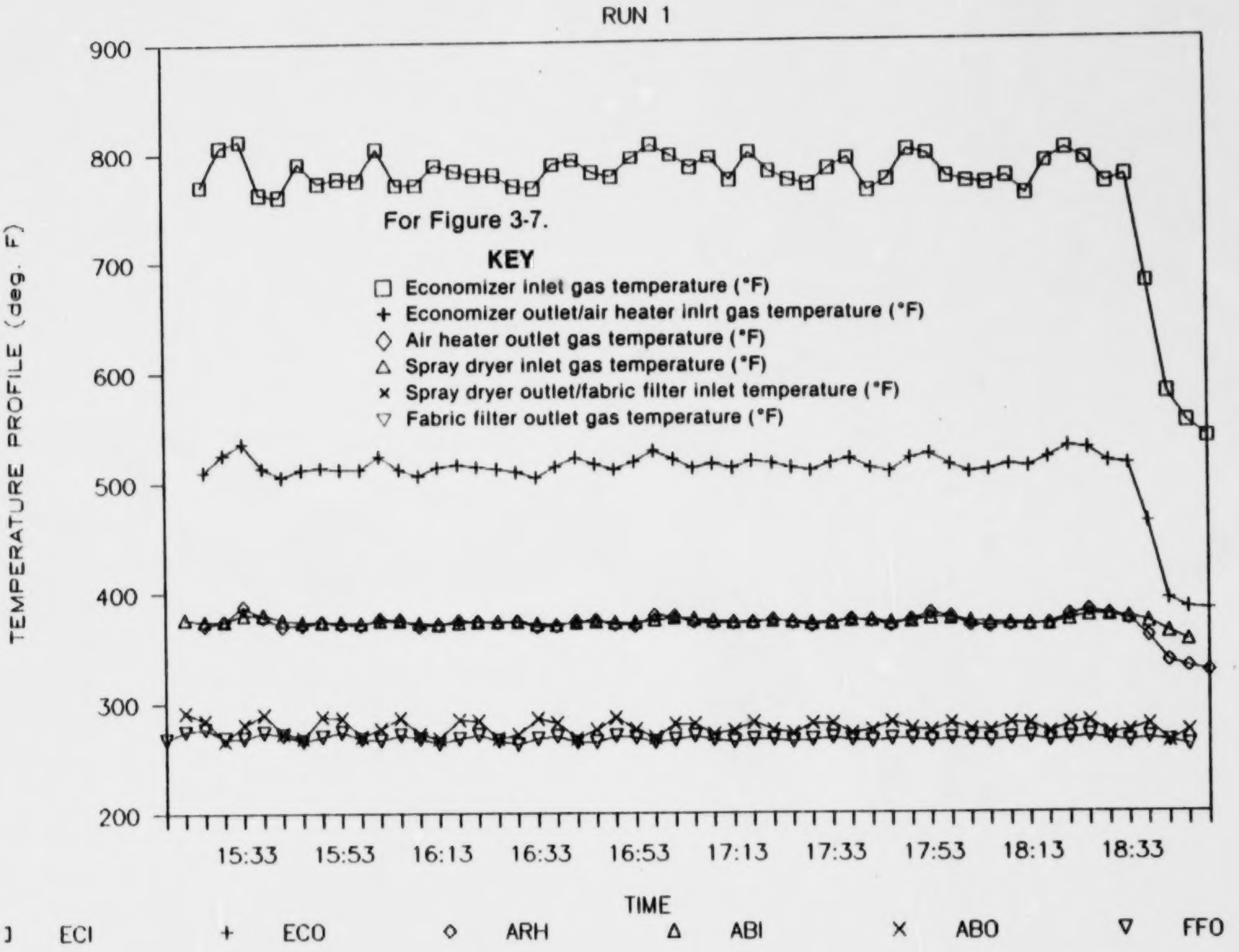

RUN 2
For Figure 3-6.
KEY
☐ Excess Oxygen (left side, % by volume, wet)
+ Excess Oxygen (right side, % by volume, wet)
COMBUSTION AIR
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
13:05
13:37
14:09
14:41
15:13
15:53
16:25
16:57
17:29
18:01
TIME
☐ EXCESS 02 (LEFT)
+ EXCESS 02 (RIGHT)

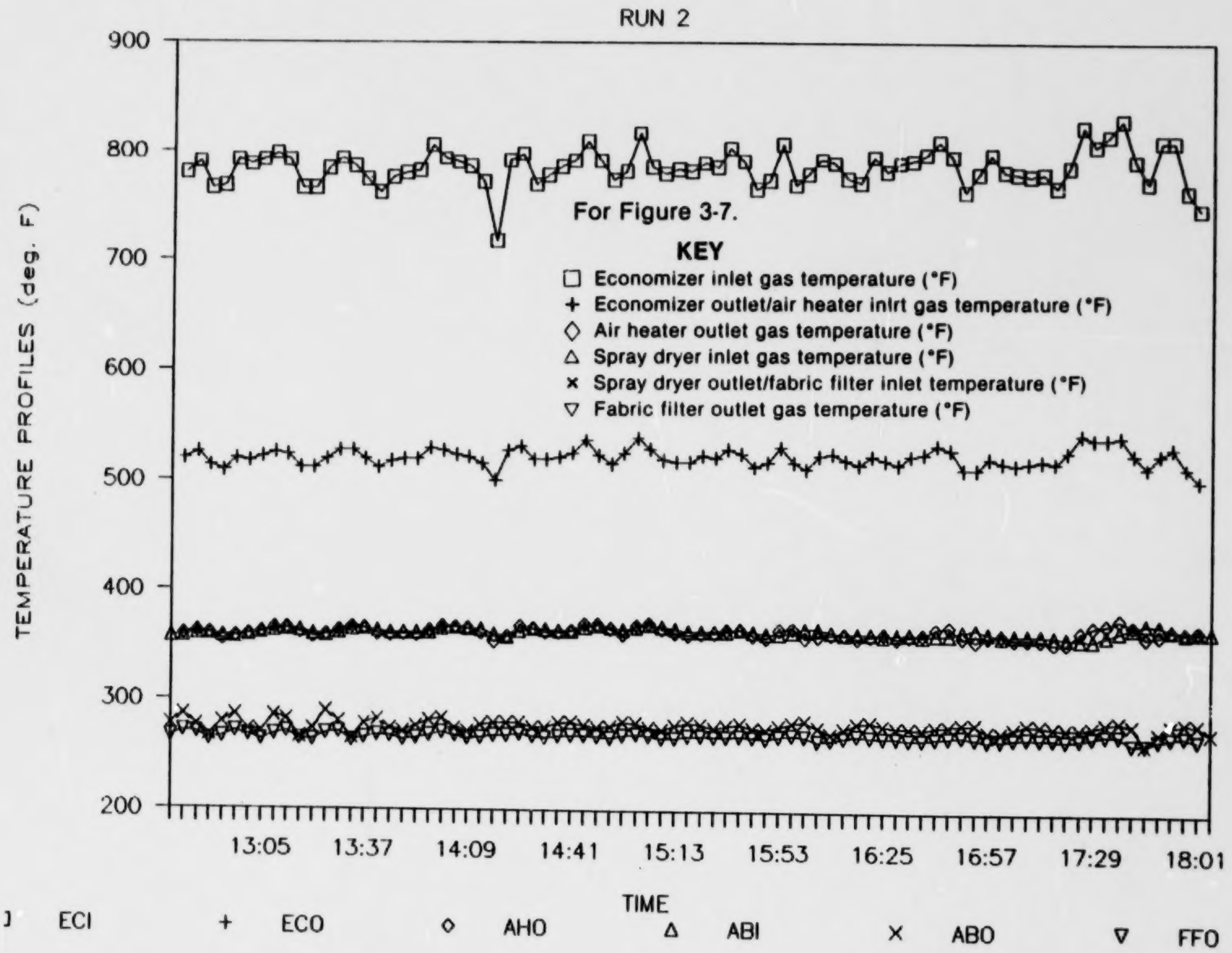

For Figure 3-6.

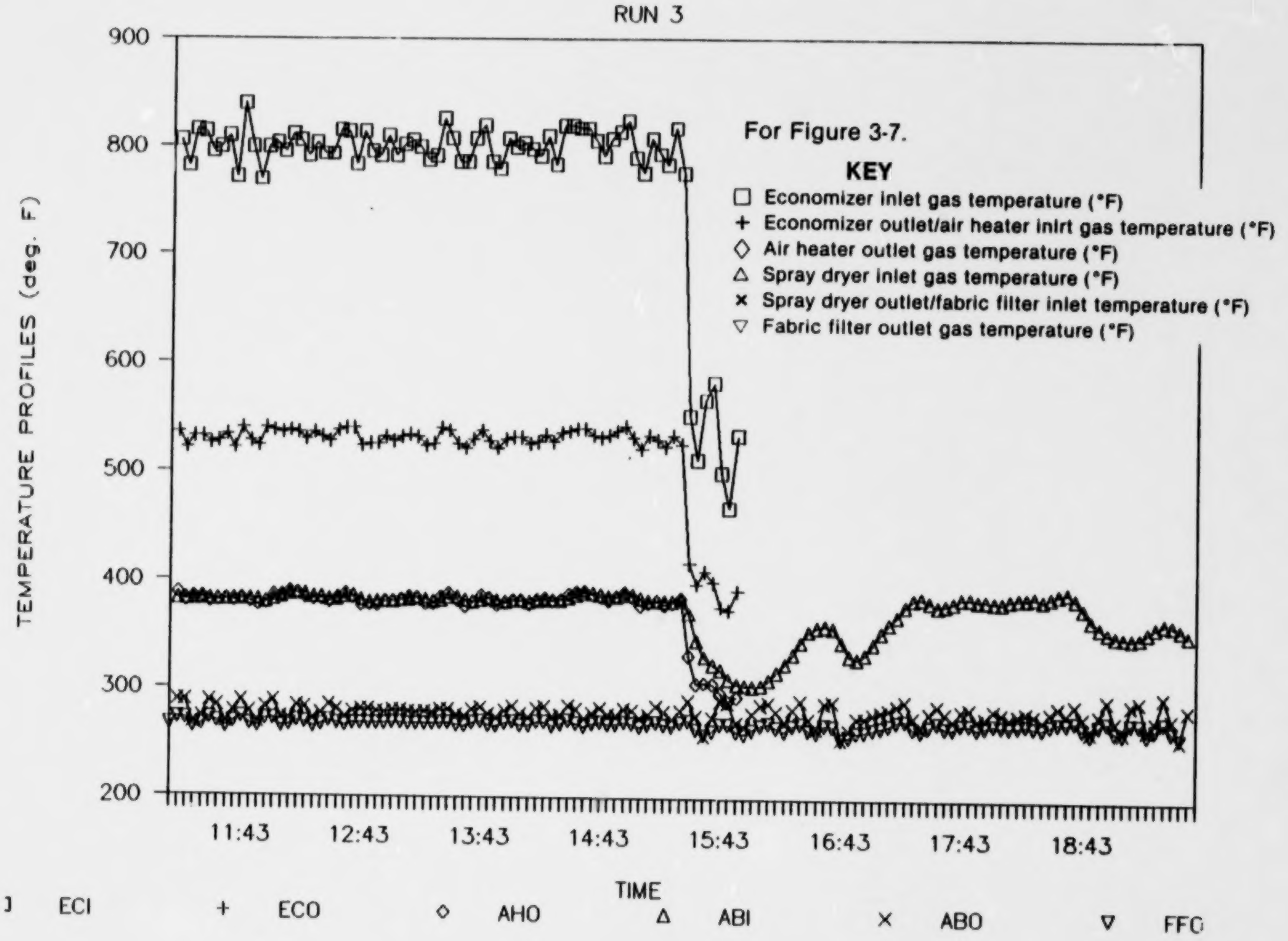

RUN 1
COMBUSTION AIR
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
15:33
15:53
16:13
16:33
16:53
17:13
17:33
17:53
18:13
18:33
TIME
□ Overfire air distribution (fraction)
+ Undergrate-furnace differential pressure (in H_2O) period
□ AIR DIST.
+ UNDGRT

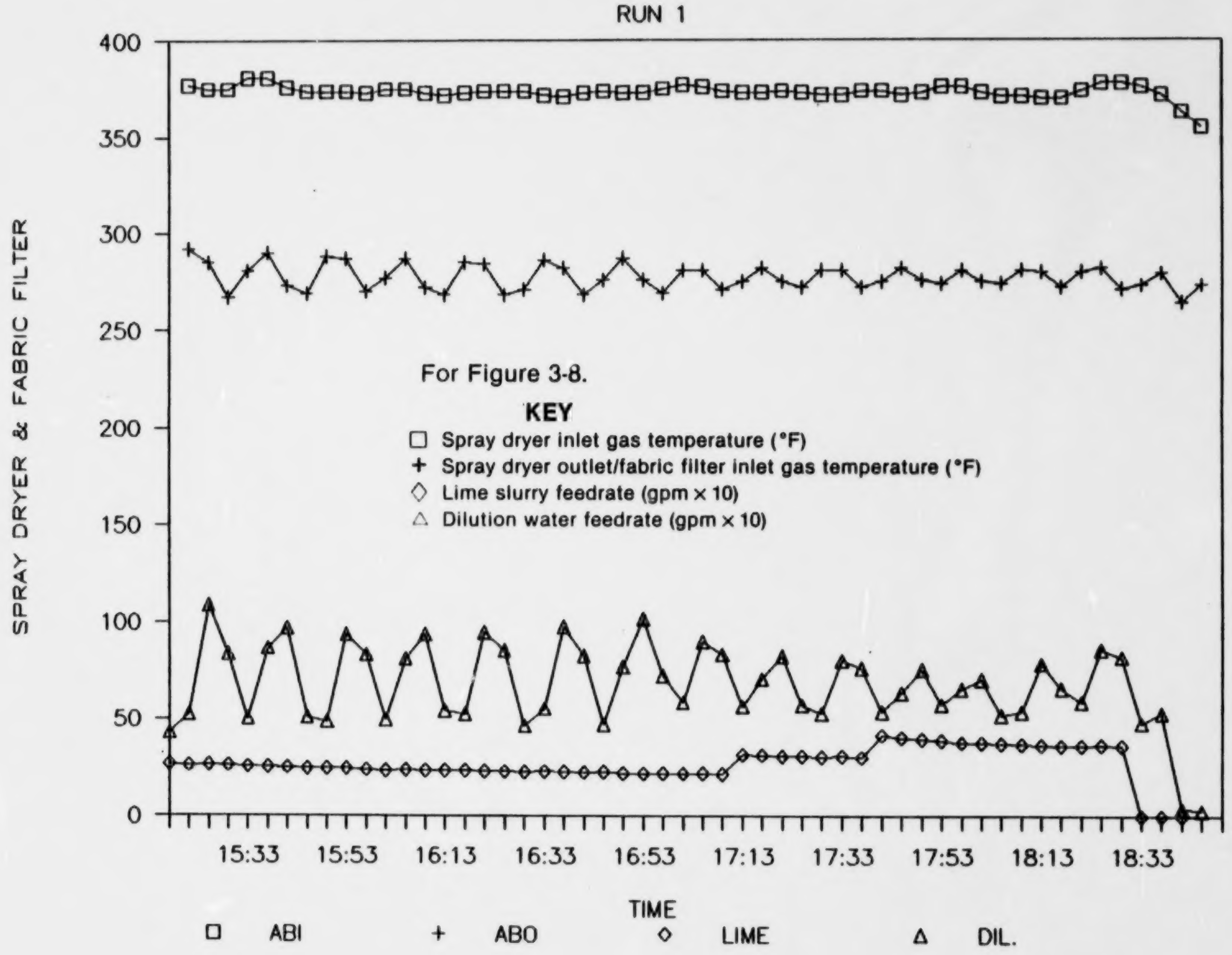

RUN 2
COMBUSITON AIR
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
13:05
13:37
14:09
14:41
15:13
15:53
16:25
16:57
17:29
18:01
TIME
☐ Overfire air distribution (fraction)
+ Undergrate-furnace differential pressure (in H_2O) period
☐ AIR DIST.
+ UNDGRT

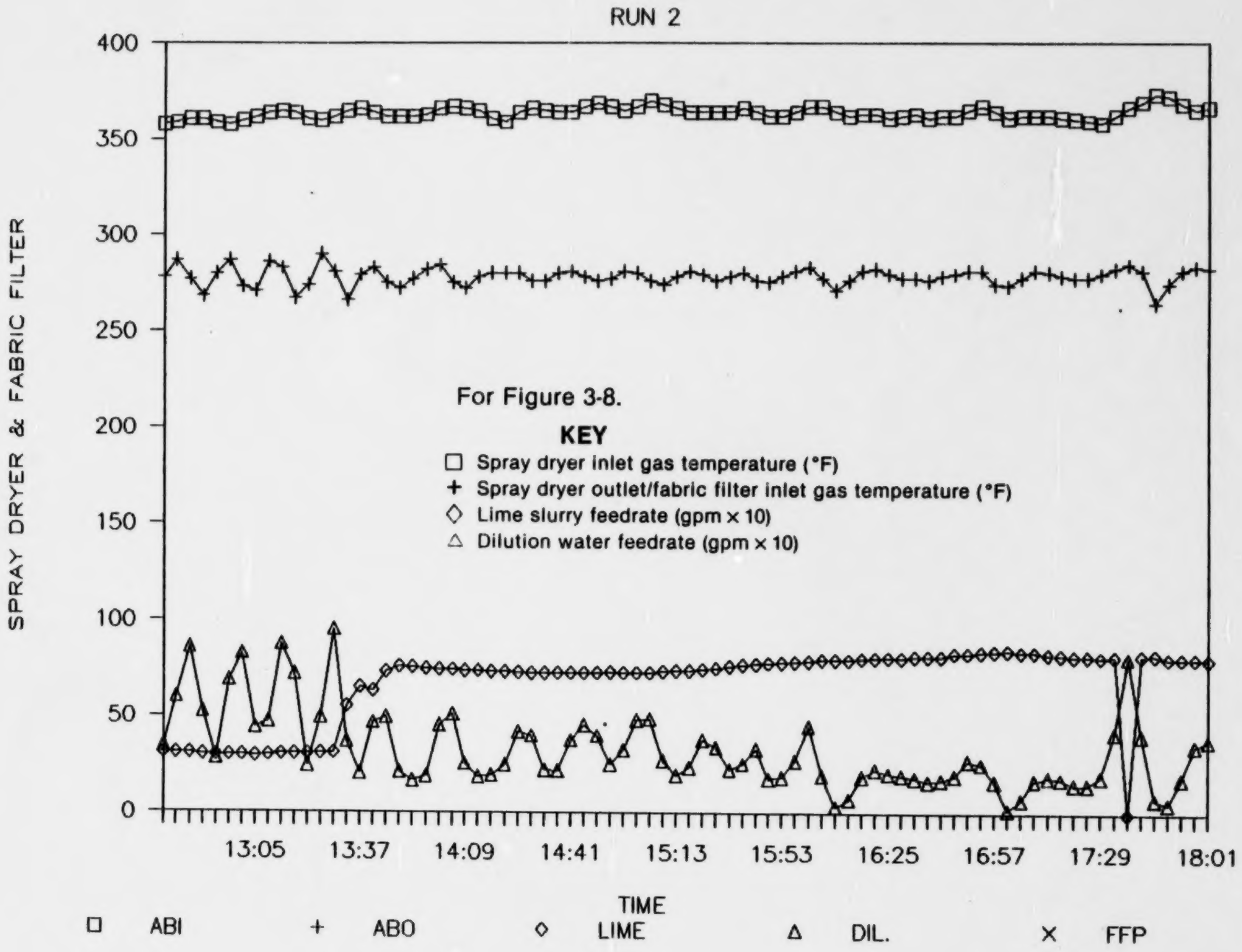

RUN 3
□ Overfire air distribution (fraction)
+ Undergrate-furnace differential pressure (in H_2O) period
COMBUSTION AIR
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
11:43
12:43
13:43
14:43
15:43
16:43
17:43
18:43
TIME
□ AIR DIST.
+ UNDGRT


RUN 1
For Figure 3-7.
KEY
□ Economizer inlet gas temperature (°F)
+ Economizer outlet/air heater inlrt gas temperature (°F)
◇ Air heater outlet gas temperature (°F)
△ Spray dryer inlet gas temperature (°F)
× Spray dryer outlet/fabric filter inlet temperature (°F)
▽ Fabric filter outlet gas temperature (°F)
TEMPERATURE PROFILE (deg. F)
900
800
700
600
500
400
300
200
15:33
15:53
16:13
16:33
16:53
17:13
17:33
17:53
18:13
18:33
TIME
] ECI
+ ECO
◇ ARH
△ ABI
× ABO
▽ FFO

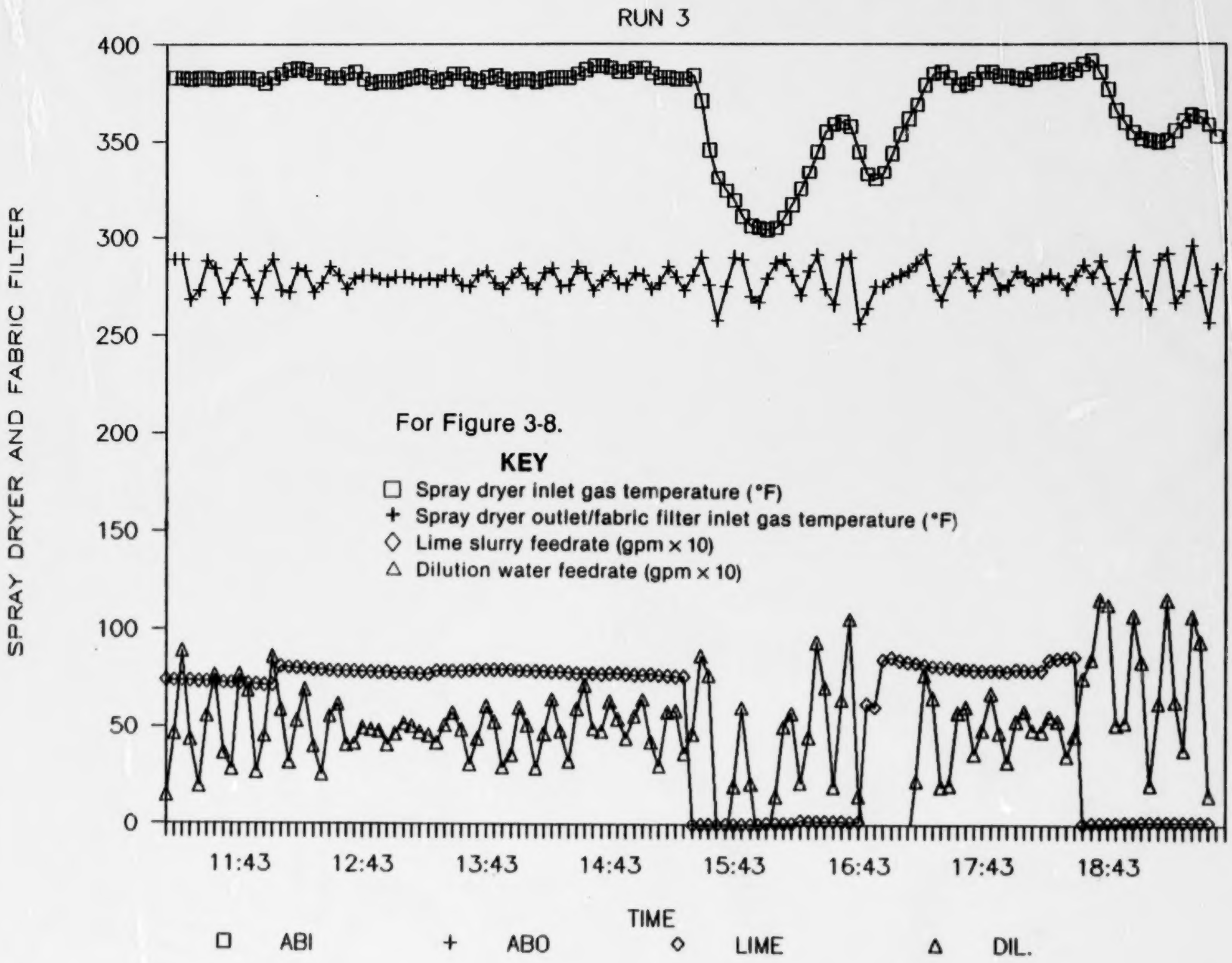

RUN 2
For Figure 3-7.
KEY
□ Economizer inlet gas temperature (°F)
+ Economizer outlet/air heater inlrt gas temperature (°F)
◇ Air heater outlet gas temperature (°F)
△ Spray dryer inlet gas temperature (°F)
× Spray dryer outlet/fabric filter inlet temperature (°F)
▽ Fabric filter outlet gas temperature (°F)
TEMPERATURE PROFILES (deg. F)
900
800
700
600
500
400
300
200
13:05
13:37
14:09
14:41
15:13
15:53
16:25
16:57
17:29
18:01
TIME
] ECI
+ ECO
◇ AHO
△ ABI
× ABO
▽ FFO

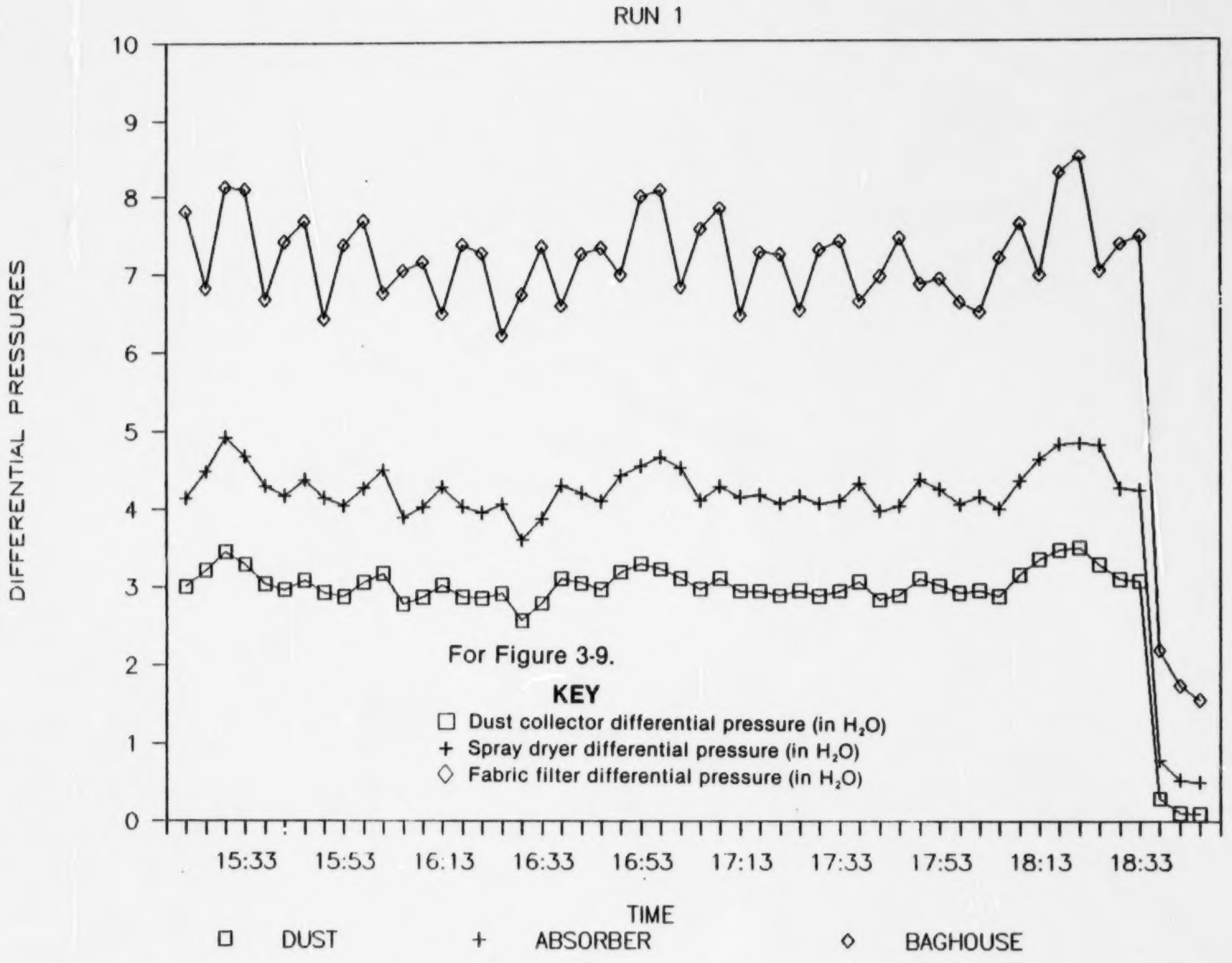

RUN 3
TEMPERATURE PROFILES (deg. F)
900
800
700
600
500
400
300
200
11:43
12:43
13:43
14:43
15:43
16:43
17:43
18:43
TIME
For Figure 3-7.
KEY
□ Economizer inlet gas temperature (°F)
+ Economizer outlet/air heater inirt gas temperature (°F)
◇ Air heater outlet gas temperature (°F)
△ Spray dryer inlet gas temperature (°F)
× Spray dryer outlet/fabric filter inlet temperature (°F)
▽ Fabric filter outlet gas temperature (°F)
] ECI
+ ECO
◇ AHO
△ ABI
× ABO
▽ FFC

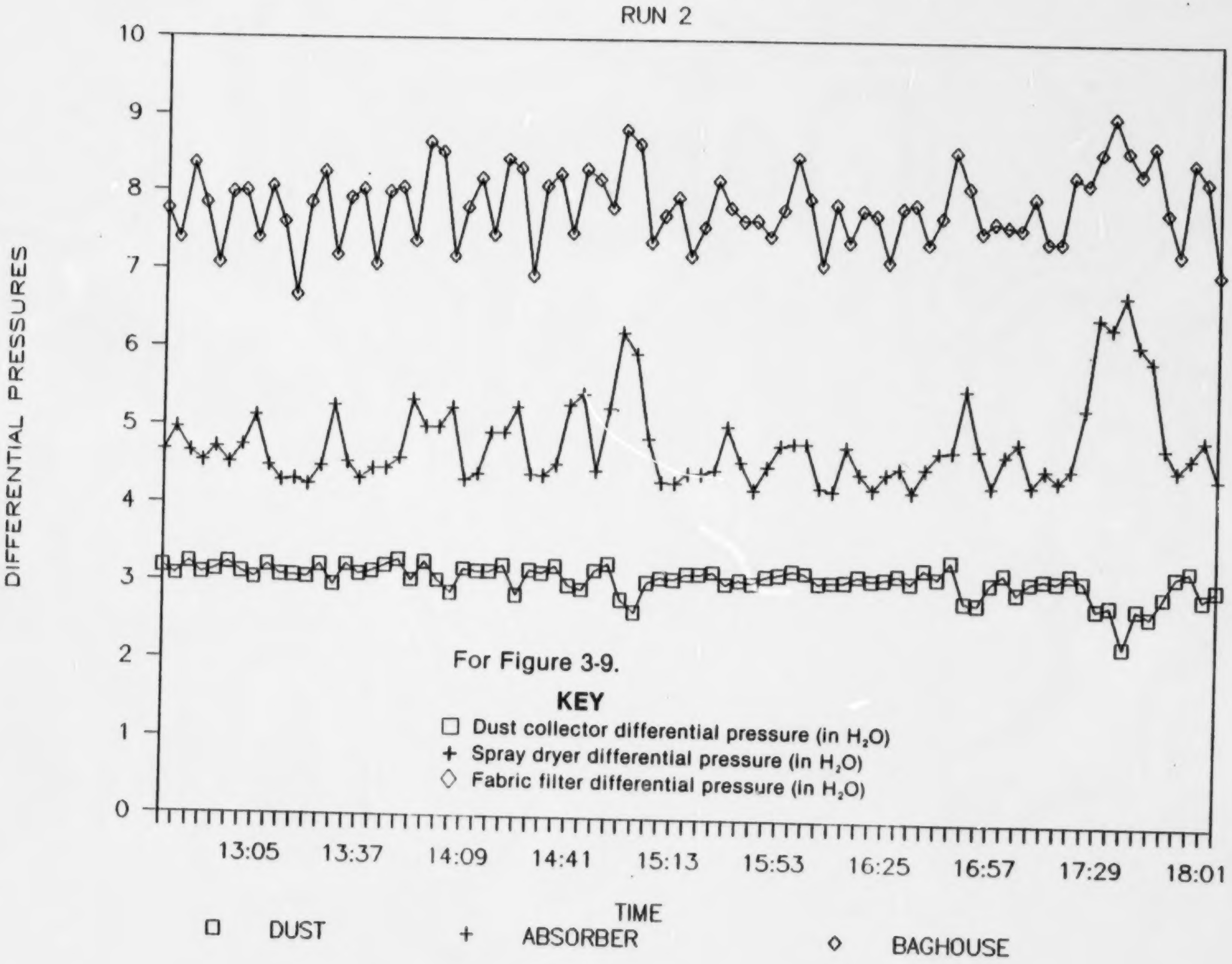

RUN 1
SPRAY DRYER & FABRIC FILTER
400
350
300
250
200
150
100
50
0
For Figure 3-8.
KEY
□ Spray dryer inlet gas temperature (°F)
+ Spray dryer outlet/fabric filter inlet gas temperature (°F)
◇ Lime slurry feedrate (gpm × 10)
△ Dilution water feedrate (gpm × 10)
15:33
15:53
16:13
16:33
16:53
17:13
17:33
17:53
18:13
18:33
TIME
□ ABI
+ ABO
◇ LIME
△ DIL.

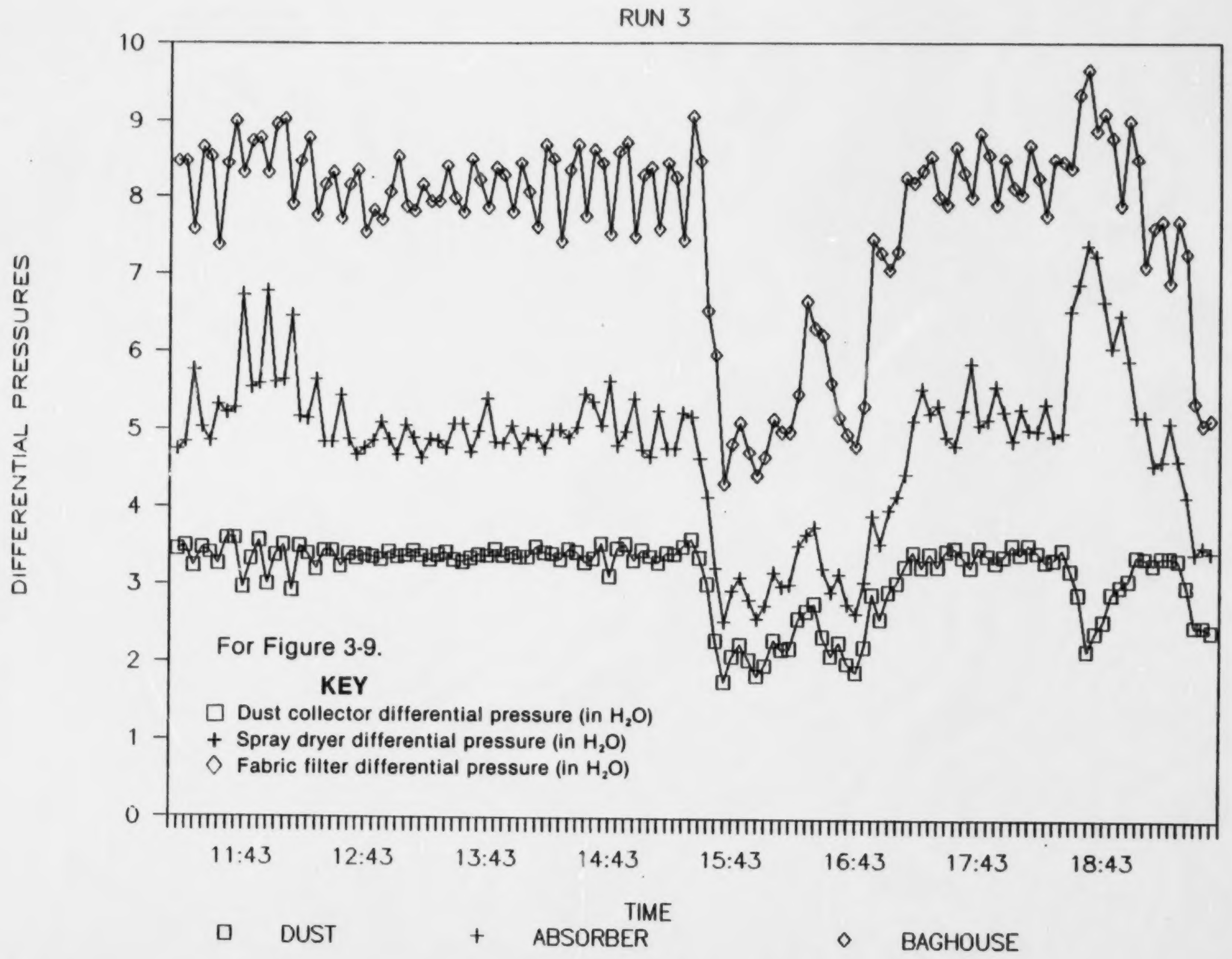


For Figure 3-8.


RUN 3
SPRAY DRYER AND FABRIC FILTER
400
350
300
250
200
150
100
50
0
11:43
12:43
13:43
14:43
15:43
16:43
17:43
18:43
TIME
□ ABI
+ ABO
◇ LIME
△ DIL.
For Figure 3-8.
KEY
□ Spray dryer inlet gas temperature (°F)
+ Spray dryer outlet/fabric filter inlet gas temperature (°F)
◇ Lime slurry feedrate (gpm × 10)
△ Dilution water feedrate (gpm × 10)


For Figure 3-9.


RUN 2
DIFFERENTIAL PRESSURES
10
9
8
7
6
5
4
3
2
1
0
13:05
13:37
14:09
14:41
15:13
15:53
16:25
16:57
17:29
18:01
TIME
For Figure 3-9.
KEY
□ Dust collector differential pressure (in H_2O)
+ Spray dryer differential pressure (in H_2O)
◇ Fabric filter differential pressure (in H_2O)
□ DUST
+ ABSORBER
◇ BAGHOUSE



For Figure 3-9.

B.2 Printouts of 4-min Readings

Page

Data Channel Definitions........................ B-22

Process data summary, EPA test 1............... B-29

Process data summary, EPA test 2............... B-42

Process data summary, EPA test 3............... B-55

DATA CHANNEL DEFINITIONS

TREND LOG PARAMETER IDENTIFICATION

UNIT A TREND LOG 31
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD, MAINE

CHANNEL NUMBER	HEADING DESCRIPTION	PARAMETER	UNITS
FI300	SHTR STM FLOW	SUPERHEATER STEAM FLOW	KLB/HR
FI341	FDWR FLOW	FEEDWATER FLOW	KLB/HR
FI349	ATTPTR WTR FLOW	ATTEMPERATOR WATER FLOW	KLB/HR
FI323	TOTAL AIR FLOW	TOTAL AIR FLOW	KLB/HR
FI323B	UNDGRT AIR FLOW	UNDERGRATE AIR FLOW	KLB/HR
FI323A	OVFR AIR FLOW	OVERFIRE AIR FLOW	KLB/HR
FI325	SEC AIR FLOW	SECONDARY AIR FLOW	KLB/HR
PI300	SPHTR STM P	SUPERHEATER STEAM PRESSURE	PSIG
PI341	MED DRM PRESS	MED. DRUM PRESSURE	PSIG
PI595	DSCH HDR PRESS	DSCH HEADER PRESSURE	PSIG
TI549	BLR FDWR TEMP	BOILER FEEDRATE TEMPERATURE	deg F
TI349A	S-SPHTR OUT T	S-SUPERHEATER OUTLET TEMPERATURE	deg F

TREND LOG PARAMETER IDENTIFICATION

UNIT A TREND LOG 32
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

CHANNEL NUMBER	HEADING DESCRIPTION	PARAMETER	UNITS
TI349C	SAT TEMP	SATURATION TEMPERATURE	deg F
TI549	BLR FDWR TEMP	BOILER FEEDRATE TEMPERATURE	deg F
TI349B	S-SPHTR IN TEMP	S-SUPERHEATER INLET TEMPERATURE	deg F
TI347	ECON OUT FDWTR T	ECONOMIZER OUTLET FEEDWATER TEMPERATURE	deg F
PI322A	FCE PRESS	FURNACE PRESSURE	in. H20
PI322B	FCE PRESS	FURNACE PRESSURE	in. H20
PI322C	FCE PRESS	FURNACE PRESSURE	in. H20
PI366	UNDGRT AIR PRESS	UNDERGRATE AIR PRESSURE	in. H20
PI365	WNDBOX PRESS	WINDBOX PRESSURE	in. H20
PI318	AH AIR OUT P	AIR HEATER AIR OUTLET PRESSURE	in. H20
PIC316	OVFR AIR FAN P	OVERFIRE AIR FAN PRESSURE	in. H20
DPI318	AH AIR DIFF P	AIR HEATER AIR DIFFERENTIAL PRESSURE	in. H20

TREND LOG PARAMETER IDENTIFICATION

UNIT A TREND LOG 33
MAINE ENERGY RECOVERY FACILITY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD, MAINE

CHANNEL NUMBER	HEADING DESCRIPTION	PARAMETER	UNITS
TI346	ECON IN GAS T	ECONOMIZER INLET GAS TEMPERATURE	deg F
TI348	ECON OUT GAS T	ECONOMIZER OUTLET GAS TEMPERATURE	deg F
TI327A	AH OUT GAS T	AIR HEATER OUTLET GAS TEMPERATURE	deg F
TI327B	AIR HTR IN AIR T	AIR HEATER INLET AIR TEMPERATURE	deg F
JI701A	GEN PWR	GENERATOR POWER	KW
TI329	AH OUT AIR T	AIR HEATER OUTLET AIR TEMPERATURE	deg F
DPI368	SHTR FLUE GAS DIF P	SUPERHEATER FLUE GAS DIFFERENTIAL PRESSURE	in. H20
DPI368	SHTR GAS DIFF P	SUPERHEATER FLUE GAS DIFFERENTIAL PRESSURE	in. H20
DPI369	ECON GAS DIFF P	ECONOMIZER GAS DIFFERENTIAL PRESSURE	in. H20
DPI370	AH GAS DIFF P	AIR HEATER GAS DIFFERENTIAL PRESSURE	in. H20
DPI365A	WNDBX- FCE DF P	WINDBOX - FURNACE DIFFERENTIAL PRESSURE	in. H20
DPI366A	UNDGRT- FCE DF P	UNDERGRATE - FURNACE DIFFERENTIAL PRESSURE	in. H20

TREND LOG PARAMETER IDENTIFICATION

UNIT A TREND LOG 34
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD, MAINE

CHANNEL NUMBER	HEADING DESCRIPTION	PARAMETER	UNITS
PI368	SHTR OUT GAS P	SUPERHEATER OUTLET GAS PRESSURE	in. H2O
PI369	AH IN GAS P	AIR HEATER INLET GAS PRESSURE	in. H2O
PI370	AH OUT GAS P	AIR HEATER OUTLET GAS PRESSURE	in. H2O
AI321A	EXCESS O2	EXCESS O2 (LEFT SIDE)	% volume, wet
AI321B	EXCESS O2	EXCESS O2 (RIGHT SIDE)	% volume, wet
FI332	GAS FLOW	GAS FLOW	KSCFH
TI101	STM TRBN IN STM T	STEAM TURBINE INLET STEAM TEMPERATURE	deg F
FI333	FUEL OIL FLOW	FUEL OIL FLOW	GPM
UI399	TOT HEAT RELEASE	TOTAL HEAT RELEASE	MBTUH
UA399A	RDF HEAT RELEASE	RDF HEAT RELEASE	MBTUH
SI301	FDR A SPEED	FEEDER A SPEED	%
SI302	FDR B SPEED	FEEDER B SPEED	%

TREND LOG PARAMETER IDENTIFICATION

UNIT A TREND LOG 37
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD,MAINE

CHANNEL NUMBER	HEADING DESCRIPTION	PARAMETER	UNITS
DPI371	DST CLTR GAS DF P	DUST COLLECTOR GAS DIFFERENTIAL PRESSURE	in. H2O
PI371	ABSR IN GAS P	ABSORBER INLET GAS PRESSURE	in. H2O
PI372	ABSR OUT DIFF P	ABSORBER OUTLET GAS PRESSURE	in. H2O
DPI372	ABSR GAS DIFF P	ABSORBER GAS DIFFERENTIAL PRESSURE	in. H2O
DPI373	BGHSE DIFF P	BAGHOUSE DIFFERENTIAL PRESSURE	in. H2O
PI373	ID FAN SUCT P	ID FAN SUCTION PRESSURE	in. H2O
TI3206	ABSR IN GAS T	ABSORBER INLET GAS TEMPERATURE	deg F
TI3228	ABSR OUT GAS T	ABSORBER OUTLET GAS TEMPERATURE	deg F
AI3804	OUTLET GAS SO2	OUTLET GAS SO2	PPMV
AI3804B	CORRTD GAS SO2	CORRECTED SO2	%
AI3804A	OUTLET GAS NOX	OUTLET GAS NOX	PPMV
FI3202	LIME SLRY FEED	LIME SLURRY FEED	GPM

TREND LOG PARAMETER IDENTIFICATION

UNIT A TREND LOG 38
MAINE ENERGY RECOVERY FACILITY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD, MAINE

CHANNEL NUMBER	HEADING DESCRIPTION	PARAMETER	UNITS
FI3200	DILUTION WATER	DILUTION WATER	GPM
PI200A	ST IN STM PRESS	STEAM TURBINE INLET STEAM PRESSURE	PSIG
FI3200	DILUTION WATER	DILUTION WATER	GPM
TI3800	BHSE OUT GAS T	BAGHOUSE OUTLET GAS TEMPERATURE	deg F
DPI3809	BGHSE DIFF P	BAGHOUSE DIFFERENTIAL PRESSURE	in. H2O
AI370A	STACK CO	STACK CO	PPMV
AI370B	STACK OPACITY	STACK OPACITY	%
AI370C	STACK CO2	STACK CO2	% volume
IIL320	IN FAN CURRENT	ID FAN CURRENT	AMPS
IIH320	ID FAN CURRENT	ID FAN CURRENT	AMPS
IIL320	ID FAN CURRENT	ID FAN CURRENT	AMPS
IIL320	ID FAN CURRENT	ID FAN CURRENT	AMPS

PROCESS DATA SUMMARY
12/9/87, 1525-1849
UNIT A

EPA TEST 1

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR STM FLOW KLB/HR	FDWR FLOW KLB/HR	ATTPTR WTR FLOW KLB/HR	TOTAL AIR FLOW KLB/HR	UNDGRT AIR FLOW KLB/HR	OVFR AIR FLOW KLB/HR	SEC AIR FLOW KLB/HR	SPHTR STM P PSIG	MED DRM PRESS PSIG	DSCH HDR PRESS PSIG	BLR FDWR TEMP DEG F	S-SPHTR OUT T DEG F
		FI300	FI341	FI349	FI323	FI323B	FI323A	FI325	PI300	PI341	PI595	TI549	TI349A
09DEC87	15:25	97.75	105.00	3.81	126.75	89.00	70.75	5.64	654	714	1016	352	738
09DEC87	15:29	103.25	94.25	4.03	131.00	89.75	70.75	5.52	660	732	1072	358	744
09DEC87	15:33	117.75	93.50	4.23	128.50	88.50	70.50	5.92	704	782	1080	367	780
09DEC87	15:37	106.25	113.25	3.88	120.25	87.75	70.75	6.03	658	720	976	357	756
09DEC87	15:41	91.00	113.25	3.79	121.75	88.50	71.50	5.81	650	704	990	342	726
09DEC87	15:45	103.50	88.50	4.25	123.75	88.50	71.50	5.84	658	728	1112	353	734
09DEC87	15:49	105.75	96.00	4.08	119.00	85.50	71.25	5.98	662	728	1084	359	748
09DEC87	15:53	107.00	102.00	3.59	122.50	83.75	71.25	5.81	662	730	1020	356	742
09DEC87	15:57	104.75	108.00	3.42	126.00	84.75	71.50	5.72	658	724	1010	355	738
09DEC87	16:01	115.50	100.25	3.66	124.25	85.00	71.00	5.92	674	756	1064	362	752
09DEC87	16:05	108.50	113.25	3.59	117.25	82.00	70.75	6.11	662	728	1028	360	754
09DEC87	16:09	100.00	113.00	3.32	120.50	82.00	71.00	5.80	654	720	994	349	736
09DEC87	16:13	110.75	92.50	3.67	122.50	82.75	71.50	5.91	664	742	1084	361	742
09DEC87	16:17	109.00	106.00	3.45	121.00	82.00	71.25	5.89	676	744	1048	363	752
09DEC87	16:21	109.25	107.00	3.13	118.50	79.75	71.25	5.95	666	736	994	361	748
09DEC87	16:25	108.75	107.00	3.20	115.75	78.75	71.25	6.06	664	736	1006	360	748
09DEC87	16:29	108.00	110.00	3.29	111.50	76.75	71.00	6.13	662	728	1014	360	750
09DEC87	16:33	100.00	107.25	3.29	119.00	74.50	71.25	5.70	654	718	1018	351	740
09DEC87	16:37	108.25	90.25	3.57	125.00	74.00	71.75	5.73	662	736	1092	360	744
09DEC87	16:41	111.75	100.75	3.33	124.75	73.75	71.75	5.91	664	740	1052	362	750
09DEC87	16:45	107.25	110.00	3.03	121.50	73.50	71.00	5.91	658	728	992	355	750
09DEC87	16:49	99.50	107.00	3.27	129.50	76.25	71.25	5.45	656	720	1028	352	746
*09DEC87	16:53	99.50	94.50	3.43	132.50	81.00	71.75	5.63	658	724	1076	357	742
*09DEC87	16:57	115.00	98.25	3.28	130.50	83.25	71.00	5.72	666	744	1048	362	758
*09DEC87	17:01	111.25	113.00	3.15	125.50	84.50	71.00	5.83	662	736	1010	358	756
*09DEC87	17:05	102.00	113.25	3.21	125.00	86.75	71.25	5.30	658	722	1024	355	742
*09DEC87	17:09	108.25	105.50	3.16	128.50	89.00	71.75	5.67	662	730	1036	357	740
*09DEC87	17:13	105.75	101.25	3.16	122.00	88.75	71.75	6.09	660	720	1040	360	742
*09DEC87	17:17	109.75	86.00	3.13	121.50	88.75	71.25	5.81	660	734	1056	356	734
09DEC87	17:21	111.50	104.00	3.07	121.75	88.25	71.25	5.86	664	732	1056	362	746
09DEC87	17:25	106.00	105.75	2.89	121.75	89.00	71.25	5.89	660	724	1028	359	740
09DEC87	17:29	99.00	99.00	2.81	121.75	89.25	71.75	5.84	654	714	1022	354	732
09DEC87	17:33	108.25	87.25	2.91	121.50	89.75	71.25	5.88	660	730	1068	357	740
09DEC87	17:37	113.50	96.50	2.90	121.25	90.25	71.00	5.93	666	744	1076	363	748
09DEC87	17:41	101.75	113.25	2.65	121.75	90.00	71.00	5.88	656	714	1008	357	748
09DEC87	17:45	100.25	95.75	2.66	121.25	92.00	71.50	5.80	654	716	1028	350	736
09DEC87	17:49	114.25	83.00	2.90	121.25	93.00	71.25	5.83	668	748	1108	363	748
09DEC87	17:53	114.50	106.25	2.70	121.75	92.00	70.50	5.86	690	766	1056	364	764
09DEC87	17:57	110.75	112.75	2.48	121.50	90.25	70.50	5.84	678	740	990	362	758
09DEC87	18:01	98.75	108.50	2.51	121.25	89.25	71.25	5.84	654	714	988	347	734
09DEC87	18:05	101.00	90.00	2.87	122.00	88.50	71.75	5.89	654	716	1092	352	736

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR STM FLOW KLB/HR	FDWR FLOW KLB/HR	ATTPTR WTR FLOW KLB/HR	TOTAL AIR FLOW KLB/HR	UNDGRT AIR FLOW KLB/HR	OVFR AIR FLOW KLB/HR	SEC AIR FLOW KLB/HR	SPHTR STM P PSIG	MED DRM PRESS PSIG	DSCH HDR PRESS PSIG	BLR FDWR TEMP DEG F	S-SPHTR OUT T DEG F
09DEC87	18:09	104.25	93.00	2.80	130.50	87.50	71.25	5.44	658	722	1096	357	738
09DEC87	18:13	97.75	107.75	2.50	136.00	88.75	72.00	5.45	654	704	1036	353	740
09DEC87	18:17	100.25	78.25	2.56	138.50	91.50	72.25	5.42	656	718	1076	352	738
09DEC87	18:21	109.50	86.25	2.63	134.50	94.00	71.50	5.58	662	734	1092	360	756
09DEC87	18:25	110.50	101.50	2.55	128.50	94.25	70.50	5.77	684	750	1060	364	768
09DEC87	18:29	104.00	109.75	2.32	125.50	93.50	70.75	5.84	658	718	984	357	752
09DEC87	18:33	103.50	97.50	2.45	126.50	93.00	71.00	5.72	656	718	1018	351	742
*09DEC87	18:37	67.25	113.50	2.65	39.75	0.98	12.66	4.22	644	652	1056	350	740
*09DEC87	18:41	7.66	48.13	2.91	13.09	100.00	10.16	3.66	628	634	1116	311	726
*09DEC87	18:45	9.38	0.00	2.79	12.69	0.98	10.22	3.69	636	638	1148	302	714
*09DEC87	18:49	8.75	0.00	2.49	12.75	0.98	10.31	3.72	632	634	1156	294	700
	AVERAGE	105.92	101.32	3.17	123.64	86.12	71.20	5.81	663	730	1040	357	746

* = NON-TEST PERIOD, VALUE NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SAT TEMP DEG F	BLR FDWR TEMP DEG F	S-SPHTR IN TEMP DEG F	ECON OUT FDWTR T DEG F	FCE PRESS PSIG	FCE PRESS PSIG	FCE PRESS PSIG	UNDGRT AIR PRESS IN H2O	WNDBOX PRESS IN H2O	AH AIR OUT P IN H2O	OVFR AIR FAN P IN H2O	AH AIR DIFF P IN H2O
		TI349C	TI549	TI349B	TI347	PI322A	PI322B	PI322C	PI366	PI365	PI318	PIC316	DPI318
09DEC87	15:25	500	352	592	456				-0.02	-0.82	5.86	25.31	0.72
09DEC87	15:29	502	358	599	463				0.20	-0.75	5.92	25.38	0.77
09DEC87	15:33	510	367	636	481				-0.49	-1.31	6.30	25.25	0.77
09DEC87	15:37	502	357	600	470				-0.51	-1.13	6.17	25.31	0.69
09DEC87	15:41	498	342	576	454				-0.33	-1.01	5.91	25.31	0.70
09DEC87	15:45	501	353	598	451				-0.15	-0.88	6.03	25.44	0.72
09DEC87	15:49	502	359	606	458				-0.44	-1.08	6.06	25.38	0.68
09DEC87	15:53	502	356	602	463				-0.32	-1.06	5.88	25.25	0.70
09DEC87	15:57	501	355	602	457				-0.07	-0.88	5.89	25.38	0.74
09DEC87	16:01	505	362	616	463				-0.24	-1.03	6.14	25.44	0.73
09DEC87	16:05	502	360	612	457				-0.67	-1.31	6.05	25.25	0.67
09DEC87	16:09	500	349	594	452				-0.14	-0.86	5.86	25.31	0.69
09DEC87	16:13	503	361	606	457				-0.20	-0.96	6.05	25.44	0.71
09DEC87	16:17	505	363	612	458				-0.43	-1.18	5.97	25.25	0.68
09DEC87	16:21	503	361	612	462				-0.33	-1.02	6.06	25.38	0.67
09DEC87	16:25	503	360	610	458				-0.39	-1.03	6.02	25.31	0.65
09DEC87	16:29	502	360	612	456				-0.66	-1.22	6.02	25.25	0.62
09DEC87	16:33	500	351	598	451				-0.11	-0.85	5.72	25.19	0.67
09DEC87	16:37	503	360	604	457				-0.05	-0.91	5.97	25.38	0.72
09DEC87	16:41	503	362	614	462				-0.36	-1.20	6.06	25.31	0.72
09DEC87	16:45	502	355	614	463				-0.31	-1.07	6.06	25.31	0.70
09DEC87	16:49	500	352	600	455				0.15	-0.77	5.72	25.19	0.76
*09DEC87	16:53	501	357	598	456				0.03	-0.91	5.98	25.38	0.79
*09DEC87	16:57	504	362	620	472				-0.09	-0.98	6.19	25.38	0.78
*09DEC87	17:01	503	358	610	468				-0.32	-1.11	6.13	25.25	0.74
*09DEC87	17:05	501	355	594	454				-0.31	-1.12	5.84	25.13	0.72
*09DEC87	17:09	502	357	602	452				-0.08	-0.94	6.03	25.38	0.76
*09DEC87	17:13	502	360	606	460				-0.53	-1.22	6.27	25.50	0.71
*09DEC87	17:17	502	356	598	463				-0.33	-1.04	5.94	25.31	0.71
09DEC87	17:21	503	362	612	468				-0.32	-1.04	6.03	25.31	0.71
09DEC87	17:25	502	359	604	458				-0.35	-1.07	5.98	25.31	0.70
09DEC87	17:29	500	354	600	455				-0.26	-0.98	6.00	25.44	0.70
09DEC87	17:33	502	357	610	465				-0.21	-0.94	6.05	25.44	0.70
09DEC87	17:37	503	363	618	467				-0.20	-0.96	6.05	25.31	0.71
09DEC87	17:41	501	357	612	458				-0.38	-1.13	5.97	25.25	0.71
09DEC87	17:45	500	350	600	455				-0.18	-0.91	6.00	25.44	0.70
09DEC87	17:49	504	363	618	466				-0.19	-0.91	6.02	25.31	0.70
09DEC87	17:53	507	364	632	468				-0.40	-1.16	5.98	25.13	0.70
09DEC87	17:57	505	362	622	463				-0.33	-1.08	5.98	25.19	0.70
09DEC87	18:01	500	347	600	451				-0.18	-0.93	6.00	25.44	0.70
09DEC87	18:05	500	352	604	458				-0.33	-1.09	5.97	25.38	0.71

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SAT TEMP DEG F	BLR FDWR TEMP DEG F	S-SPHTR IN TEMP DEG F	ECON OUT FDWTR T DEG F	FCE PRESS PSIG	FCE PRESS PSIG	FCE PRESS PSIG	UNDGRT AIR PRESS IN H2O	WNDBOX PRESS IN H2O	AH AIR OUT P IN H2O	OVFR AIR FAN P IN H2O	AH AIR DIFF P IN H2O
09DEC87	18:09	501	357	610	460				0.25	-0.73	5.81	25.31	0.77
09DEC87	18:13	500	353	612	461				0.12	-0.98	5.83	25.25	0.82
09DEC87	18:17	500	352	608	464				0.19	-0.93	5.89	25.38	0.85
09DEC87	18:21	503	360	628	478				0.11	-0.89	6.17	25.44	0.83
09DEC87	18:25	506	364	634	478				-0.32	-1.21	6.13	25.19	0.77
09DEC87	18:29	501	357	618	466				-0.47	-1.31	5.97	25.06	0.73
09DEC87	18:33	501	351	612	462				-0.13	-1.01	6.00	25.25	0.75
‡09DEC87	18:37	495	350	596	448								-0.19
‡09DEC87	18:41	490	311	516	385				-0.84	-0.91	-0.39	-1.08	-0.03
‡09DEC87	18:45	491	302	512	397				-0.34	-0.92	-0.40	-1.07	-0.03
‡09DEC87	18:49	491	294	510	414				-0.84	-0.92	-0.40	-1.07	-0.03
	AVERAGE	502	357	609	461				-0.23	-1.01	5.99	25.31	0.72

‡ = NON-TEST PERIOD, VALUE NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	ECON IN GAS T DEG F	ECON OUT GAS T DEG F	AH OUT GAS T DEG F	AIR HTR IN AIR T DEG F	GEN PWR KW	AH OUT AIR T DEG F	SHTR FLUE GAS DIF P IN H2O	SHTR GAS DIFF P IN H2O	ECON GAS DIFF P IN H2O	AH GAS DIFF P IN H2O	WNDBX-FCE DF P IN H2O	UNDGRT-FCE DF P IN H2O
		TI346	TI348	TI327A	TI327B	JI701A	TI329	DPI368	DPI368	DPI369	DPI370	DPI365A	DPI366A
*09DEC87	15:25	770	510	371	124	19456	378	0.27	0.27	1.55	1.74	-0.31	0.48
*09DEC87	15:29	806	526	375	124	22016	376	0.35	0.35	1.79	1.98	-0.32	0.63
09DEC87	15:33	812	536	388	123	24000	389	0.35	0.35	1.75	1.99	-0.32	0.49
09DEC87	15:37	762	514	379	122	19968	389	0.26	0.26	1.50	1.72	-0.31	0.32
09DEC87	15:41	760	505	370	124	17664	380	0.27	0.27	1.54	1.75	-0.32	0.37
09DEC87	15:45	790	512	371	126	20608	377	0.29	0.29	1.58	1.75	-0.31	0.41
09DEC87	15:49	772	514	374	128	21504	381	0.26	0.26	1.50	1.68	-0.32	0.32
09DEC87	15:53	776	512	372	127	21312	380	0.27	0.27	1.53	1.70	-0.32	0.41
09DEC87	15:57	774	512	371	127	20160	377	0.27	0.27	1.53	1.70	-0.32	0.49
09DEC87	16:01	804	524	377	127	22528	381	0.30	0.30	1.63	1.80	-0.32	0.47
09DEC87	16:05	770	512	376	128	20992	385	0.26	0.26	1.49	1.70	-0.33	0.31
09DEC87	16:09	770	506	370	127	19520	380	0.23	0.23	1.48	1.63	-0.32	0.41
09DEC87	16:13	788	514	371	128	22208	378	0.26	0.26	1.56	1.71	-0.33	0.44
09DEC87	16:17	782	516	375	128	22656	381	0.27	0.27	1.55	1.74	-0.32	0.43
09DEC87	16:21	778	514	374	128	22016	383	0.23	0.23	1.48	1.64	-0.32	0.37
09DEC87	16:25	778	512	373	129	21888	383	0.23	0.23	1.47	1.63	-0.32	0.32
09DEC87	16:29	768	509	374	129	20864	386	0.25	0.25	1.38	1.60	-0.32	0.24
09DEC87	16:33	766	504	369	128	19584	379	0.23	0.23	1.44	1.59	-0.32	0.42
09DEC87	16:37	788	514	370	127	22080	376	0.27	0.27	1.56	1.70	-0.32	0.53
09DEC87	16:41	792	522	374	127	22208	379	0.28	0.28	1.66	1.84	-0.33	0.52
09DEC87	16:45	780	516	375	128	20288	384	0.26	0.26	1.52	1.72	-0.32	0.44
09DEC87	16:49	776	511	371	126	20032	378	0.26	0.26	1.57	1.73	-0.32	0.60
*09DEC87	16:53	794	518	370	125	20992	373	0.32	0.32	1.70	1.89	-0.32	0.62
*09DEC87	16:57	806	528	379	125	22144	381	0.33	0.33	1.65	1.87	-0.33	0.57
*09DEC87	17:01	796	520	378	126	21056	386	0.30	0.30	1.59	1.79	-0.33	0.47
*09DEC87	17:05	784	512	373	127	20480	382	0.28	0.28	1.58	1.77	-0.33	0.48
*09DEC87	17:09	794	516	372	126	21120	378	0.28	0.28	1.59	1.78	-0.33	0.53
*09DEC87	17:13	772	512	372	127	20928	379	0.28	0.28	1.50	1.71	-0.33	0.36
*09DEC87	17:17	798	518	372	129	20928	380	0.28	0.28	1.59	1.74	-0.33	0.38
09DEC87	17:21	780	516	375	128	21824	384	0.27	0.27	1.51	1.70	-0.32	0.40
09DEC87	17:25	772	512	372	128	21248	381	0.25	0.25	1.49	1.68	-0.32	0.39
09DEC87	17:29	768	509	369	128	19584	377	0.24	0.24	1.54	1.69	-0.32	0.40
09DEC87	17:33	782	516	372	129	21056	378	0.28	0.28	1.52	1.69	-0.31	0.41
09DEC87	17:37	792	520	375	129	22336	382	0.27	0.27	1.56	1.72	-0.32	0.44
09DEC87	17:41	762	511	373	127	20032	383	0.26	0.26	1.48	1.71	-0.32	0.44
09DEC87	17:45	772	508	369	128	19328	378	0.26	0.26	1.50	1.68	-0.31	0.42
09DEC87	17:49	800	520	374	129	22528	380	0.27	0.27	1.58	1.74	-0.32	0.40
09DEC87	17:53	796	524	380	127	23360	387	0.29	0.29	1.61	1.78	-0.34	0.42
09DEC87	17:57	774	514	377	126	22208	387	0.26	0.26	1.49	1.69	-0.32	0.43
09DEC87	18:01	770	507	369	127	18944	379	0.23	0.23	1.51	1.66	-0.32	0.42
09DEC87	18:05	768	509	368	127	19328	376	0.29	0.29	1.52	1.71	-0.32	0.44

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	ECON IN GAS T DEG F	ECON OUT GAS T DEG F	AH OUT GAS T DEG F	AIR HTR IN AIR T DEG F	GEN PWR KW	AH OUT AIR T DEG F	SHTR FLUE GAS DIF P IN H2O	SHTR GAS DIFF P IN H2O	ECON GAS DIFF P IN H2O	AH GAS DIFF P IN H2O	WNDBX-FCE DF P IN H2O	UNDGRT-FCE DF P IN H2O
09DEC87	18:09	774	514	369	125	20736	375	0.28	0.28	1.55	1.74	-0.31	0.67
09DEC87	18:13	758	512	369	123	19200	373	0.29	0.29	1.62	1.86	-0.31	0.79
09DEC87	18:17	788	520	370	122	19904	370	0.37	0.37	1.77	2.00	-0.32	0.80
09DEC87	18:21	800	530	378	123	22080	378	0.34	0.34	1.73	1.96	-0.32	0.68
09DEC87	18:25	790	528	382	126	23104	387	0.33	0.33	1.66	1.90	-0.33	0.55
09DEC87	18:29	768	516	378	127	20352	386	0.30	0.30	1.61	1.85	-0.33	0.51
09DEC87	18:33	774	514	374	127	19328	382	0.27	0.27	1.55	1.75	-0.32	0.56
*09DEC87	18:37	678	462	359	150	16288	389	0.17	0.17	0.37	0.93	0.39	0.43
*09DEC87	18:41	578	392	336	188	10400	391	-0.14	-0.14	0.39	0.30	-0.25	-0.18
*09DEC87	18:45	552	384	331	193	9184	383	-0.14	-0.14	0.39	0.30	-0.23	-0.15
*09DEC87	18:49	538	383	327	191	8640	374	-0.15	-0.15	0.40	0.30	-0.23	-0.14
	AVERAGE	779	515	374	127	20989	381	0.27	0.27	1.55	1.74	-0.32	0.46

* = NON-TEST PERIOD, VALUE NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR OUT GAS P IN H2O	AH IN GAS P IN H2O	AH OUT GAS P IN H2O	EXCESS O2 %	EXCESS O2 %	GAS FLOW KSCFH	STM TRBN IN STM T DEG F	FUEL OIL FLOW GPM	TOT HEAT RELEASE MBTUH	RDF HEAT RELEASE MBTUH	FDR A SPEED %	FDR B SPEED %
		PI368	PI369	PI370	AI321A	AI321B	FI332	TI101	FI333	UI399	UI399A	SI301	SI302
*09DEC87	15:25	-0.64	-2.52	-4.27	6.03	8.38	-0.03	742	-0.01	133.00	133.00	97.25	74.00
*09DEC87	15:29	-0.68	-2.45	-4.39	3.90	6.03	-0.03	750	-0.01	147.50	147.50	97.25	90.75
09DEC87	15:33	-1.22	-2.70	-4.63	4.52	6.83	-0.03	780	-0.01	176.00	176.00	97.25	60.38
09DEC87	15:37	-1.13	-2.65	-4.36	6.91	9.81	-0.04	762	-0.01	145.00	145.00	97.25	35.50
09DEC87	15:41	-0.71	-2.23	-3.88	6.17	8.78	-0.04	734	-0.01	117.75	117.75	97.25	49.00
09DEC87	15:45	-0.78	-2.36	-4.17	4.56	6.88	-0.03	738	-0.01	150.00	150.00	97.25	55.50
09DEC87	15:49	-0.87	-2.26	-3.85	5.72	8.06	-0.04	754	-0.01	151.00	151.50	60.75	73.25
09DEC87	15:53	-1.04	-2.56	-4.13	5.39	7.69	-0.03	750	-0.01	151.00	151.00	70.50	82.50
09DEC87	15:57	-0.81	-2.24	-3.98	6.06	8.56	-0.04	746	-0.01	143.50	144.00	77.50	90.25
09DEC87	16:01	-0.93	-2.32	-4.42	3.90	6.09	-0.04	752	-0.01	167.50	167.50	70.00	82.25
09DEC87	16:05	-1.01	-2.38	-3.97	6.00	8.50	-0.04	758	-0.01	149.00	149.00	56.63	68.25
09DEC87	16:09	-0.88	-2.52	-4.19	5.25	7.69	-0.04	742	-0.01	133.50	133.50	67.50	79.75
09DEC87	16:13	-0.97	-2.37	-3.97	4.44	6.70	-0.04	744	-0.01	161.50	161.50	68.00	80.00
09DEC87	16:17	-1.09	-2.67	-4.41	5.34	7.67	-0.04	756	-0.01	152.50	152.50	64.25	76.75
09DEC87	16:21	-1.08	-2.66	-4.33	5.09	7.31	-0.03	752	-0.01	152.50	152.50	59.88	71.75
09DEC87	16:25	-0.93	-2.47	-4.16	4.75	7.02	-0.04	752	-0.01	151.50	151.50	55.63	67.00
09DEC87	16:29	-0.83	-2.16	-3.73	5.53	7.86	-0.03	754	-0.01	149.00	149.00	47.13	58.75
09DEC87	16:33	-0.79	-2.12	-3.66	5.45	7.73	-0.04	744	-0.01	136.50	136.50	55.88	67.25
09DEC87	16:37	-0.91	-2.38	-4.06	4.59	6.53	-0.04	746	-0.01	158.00	158.00	62.88	75.00
09DEC87	16:41	-1.36	-2.76	-4.52	4.95	7.08	-0.04	754	-0.01	159.50	159.50	60.88	73.00
09DEC87	16:45	-1.06	-2.56	-4.23	5.50	7.73	-0.04	750	-0.01	148.50	148.50	59.00	70.75
09DEC87	16:49	-0.71	-2.16	-3.95	5.81	8.03	-0.04	746	-0.01	135.50	135.50	70.50	82.75
*09DEC87	16:53	-0.87	-2.27	-4.13	5.89	8.03	-0.04	748	-0.01	140.50	140.50	88.75	100.50
*09DEC87	16:57	-0.96	-2.61	-4.52	5.52	7.48	-0.04	754	-0.01	167.50	167.50	82.75	95.50
*09DEC87	17:01	-1.03	-2.49	-4.20	5.59	7.75	-0.04	752	-0.01	154.50	154.50	72.25	84.75
*09DEC87	17:05	-1.01	-2.44	-4.22	5.86	8.16	-0.04	746	-0.01	137.00	137.00	75.25	87.75
*09DEC87	17:09	-0.90	-2.41	-4.13	5.44	7.53	-0.04	744	-0.01	151.00	151.00	81.50	93.75
*09DEC87	17:13	-1.15	-2.40	-4.14	6.63	8.97	-0.04	748	-0.01	148.50	148.50	78.50	91.00
*09DEC87	17:17	-0.95	-2.69	-4.33	4.25	6.30	-0.04	740	-0.01	162.50	162.50	87.50	99.50
09DEC87	17:21	-1.00	-2.60	-4.23	5.91	8.13	-0.04	748	-0.01	157.50	157.50	74.50	86.75
09DEC87	17:25	-1.00	-2.54	-4.23	5.72	7.98	-0.04	748	-0.01	147.00	147.00	74.00	85.75
09DEC87	17:29	-1.12	-2.58	-4.22	6.31	8.59	-0.05	742	-0.01	137.00	137.50	85.50	98.25
09DEC87	17:33	-0.81	-2.47	-4.20	5.25	7.48	-0.04	744	-0.01	159.50	159.50	90.50	100.75
09DEC87	17:37	-1.00	-2.73	-4.48	4.38	6.58	-0.04	750	-0.01	165.00	165.00	86.50	98.25
09DEC87	17:41	-0.92	-2.34	-4.06	7.38	9.81	-0.04	752	-0.01	136.00	136.00	81.00	93.75
09DEC87	17:45	-0.76	-2.16	-3.86	5.63	7.94	-0.04	740	-0.01	141.50	141.50	96.00	100.75
09DEC87	17:49	-0.82	-2.34	-4.08	3.77	5.86	-0.04	746	-0.01	172.00	172.50	95.25	100.75
09DEC87	17:53	-1.21	-2.85	-4.67	4.66	6.83	-0.04	764	-0.01	163.50	163.50	79.00	91.50
09DEC87	17:57	-1.05	-2.36	-4.05	6.34	8.72	-0.05	762	-0.01	153.50	153.50	64.25	76.50
09DEC87	18:01	-1.15	-2.70	-4.50	5.86	8.00	-0.04	740	-0.01	133.50	134.00	70.00	82.00
09DEC87	18:05	-0.85	-2.45	-4.17	6.28	8.75	-0.04	736	-0.01	145.50	145.50	81.50	94.00

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR OUT GAS P IN H2O	AH IN GAS P IN H2O	AH OUT GAS P IN H2O	EXCESS O2 %	EXCESS O2 %	GAS FLOW KSCFH	STM TRBN IN STM T DEG F	FUEL OIL FLOW GPM	TOT HEAT RELEASE MBTUH	RDF HEAT RELEASE MBTUH	FDR A SPEED %	FDR B SPEED %
09DEC87	18:09	-0.63	-2.34	-4.14	6.22	8.56	-0.04	738	-0.01	149.50	149.50	90.75	100.75
09DEC87	18:13	-1.02	-2.76	-4.64	7.69	10.25	-0.04	742	-0.01	132.00	132.00	97.25	100.75
09DEC87	18:17	-0.75	-2.38	-4.36	5.95	8.31	-0.04	742	-0.01	149.00	149.00	97.50	100.75
09DEC87	18:21	-0.91	-2.52	-4.53	5.50	7.88	-0.04	756	-0.01	163.00	163.00	91.75	100.75
09DEC87	18:25	-1.36	-3.17	-5.11	6.02	8.38	-0.05	772	-0.01	158.50	158.50	78.50	91.00
09DEC87	18:29	-1.09	-2.49	-4.28	6.84	9.34	-0.05	760	-0.01	142.00	142.50	74.75	86.75
09DEC87	18:33	-1.12	-2.46	-4.25	6.22	8.59	-0.04	742	-0.01	147.50	147.50	79.00	92.00
*09DEC87	18:37	-1.75		-2.79	12.31	14.56	-0.05	742	-0.01	74.25	74.25	-0.12	-0.15
*09DEC87	18:41	-0.48	-1.09	-1.44	17.13	20.06	-0.05	748	-0.01	-4.42	-4.23	-0.12	-0.15
*09DEC87	18:45	-0.47	-1.07	-1.40	17.88	20.63	-0.05	744	-0.01	17.00	17.06	-0.12	-0.15
*09DEC87	18:49	-0.39	-0.73	-1.00	18.31	20.69	-0.05	734	-0.01	15.75	15.84	-0.12	-0.15
	AVERAGE	-0.96	-2.49	-4.22	5.59	7.91	-0.04	750	-0.01	149.80	149.88	76.50	81.57

* = NON-TEST PERIOD, VALUE NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DST CLTR GAS DF P IN H20	ABSR IN GAS P IN H20	ABSR OUT GAS P IN H20	ABSR GAS DIFF P IN H20	BGHSE DIFF P IN H20	ID FAN SUCT P IN H20	ABSR IN GAS T DEG F	ABSR OUT GAS T DEG F	OUTLET GAS SO2 PPMV	CORRTD GAS SO2 %	OUTLET GAS NOX PPMV	LIME SLRY FEED GPM
		DPI371	PI371	PI372	DPI372	DPI373	PI373	TI3206	TI3228	AI3804	AI3804B	AI3804A	FI3202
*09DEC87	15:22	3.01	-7.58	-11.81	4.14	7.81	-19.19	377	292	-0.90	-0.11	-0.01	2.67
*09DEC87	15:26	3.22	-7.38	-11.72	4.48	6.83	-18.94	375	285	-0.90	-0.11	-0.01	2.62
09DEC87	15:30	3.45	-7.86	-12.84	4.92	8.13	-20.94	375	267	-0.90	-0.11	-0.01	2.63
09DEC87	15:34	3.30	-8.41	-12.91	4.67	8.09	-20.88	381	281	-0.90	-0.11	-0.01	2.60
09DEC87	15:38	3.04	-6.97	-11.00	4.30	6.69	-18.56	381	290	-0.90	-0.11	-0.01	2.53
09DEC87	15:42	2.97	-7.00	-11.28	4.17	7.42	-18.63	376	273	-0.90	-0.11	-0.01	2.52
09DEC87	15:46	3.09	-7.59	-11.88	4.38	7.69	-19.63	374	269	-0.90	-0.11	-0.01	2.48
09DEC87	15:50	2.93	-6.97	-11.00	4.14	6.44	-17.81	374	288	-0.02	-0.00	-0.01	2.44
09DEC87	15:54	2.88	-6.72	-10.84	4.05	7.38	-18.25	374	287	3.58	0.43	-0.01	2.42
09DEC87	15:58	3.05	-7.20	-11.63	4.27	7.69	-19.06	373	270	-0.90	-0.11	-0.01	2.42
09DEC87	16:02	3.17	-7.64	-11.81	4.50	6.77	-19.25	375	277	-0.90	-0.11	-0.01	2.38
09DEC87	16:06	2.78	-6.84	-10.81	3.90	7.05	-17.88	375	287	-0.24	-0.03	-0.01	2.34
09DEC87	16:10	2.87	-7.13	-11.22	4.03	7.16	-18.13	373	272	-0.53	-0.06	-0.01	2.36
09DEC87	16:14	3.02	-7.17	-11.41	4.28	6.50	-18.25	372	268	-0.90	-0.11	-0.01	2.31
09DEC87	16:18	2.87	-6.73	-10.66	4.03	7.39	-18.38	373	285	-0.90	-0.11	-0.01	2.32
09DEC87	16:22	2.85	-6.89	-10.88	3.95	7.27	-18.13	374	284	-0.90	-0.11	-0.01	2.34
09DEC87	16:26	2.91	-7.05	-10.97	4.06	6.22	-17.50	374	268	-0.90	-0.11	-0.01	2.30
09DEC87	16:30	2.57	-5.97	-9.66	3.61	6.73	-16.63	374	271	-0.90	-0.11	-0.01	2.27
09DEC87	16:34	2.79	-6.63	-10.56	3.88	7.34	-17.88	372	286	-0.51	-0.06	-0.01	2.25
09DEC87	16:38	3.11	-7.30	-11.53	4.30	6.59	-18.38	371	282	-0.58	-0.07	-0.01	2.27
09DEC87	16:42	3.05	-7.34	-11.53	4.20	7.25	-18.81	373	268	-0.90	-0.11	-0.01	2.24
09DEC87	16:46	2.96	-7.03	-11.03	4.09	7.33	-18.63	374	276	0.51	0.06	-0.01	2.23
09DEC87	16:50	3.19	-7.73	-12.28	4.42	6.98	-19.00	373	287	-0.90	-0.11	-0.01	2.24
*09DEC87	16:54	3.30	-8.13	-12.72	4.55	7.98	-20.19	373	276	-0.90	-0.11	-0.01	2.19
*09DEC87	16:58	3.23	-7.58	-12.28	4.66	8.06	-20.38	375	269	-0.02	-0.00	-0.01	2.16
*09DEC87	17:02	3.11	-7.59	-11.88	4.52	6.83	-19.13	377	281	-0.15	-0.02	-0.01	2.19
*09DEC87	17:06	2.97	-7.27	-11.28	4.11	7.56	-18.81	376	281	-0.90	-0.11	-0.01	2.16
*09DEC87	17:10	3.11	-7.53	-11.84	4.28	7.83	-19.50	374	271	4.94	0.60	-0.01	2.17
*09DEC87	17:14	2.94	-6.95	-10.91	4.14	6.47	-17.94	373	275	-0.90	-0.11	-0.01	2.13
*09DEC87	17:18	2.94	-7.08	-11.34	4.17	7.27	-18.44	373	282	-0.90	-0.11	-0.01	3.12
09DEC87	17:22	2.88	-7.02	-11.16	4.06	7.23	-18.31	374	275	0.72	0.08	-0.01	3.09
09DEC87	17:26	2.95	-7.28	-11.53	4.16	6.53	-17.94	373	272	0.33	0.04	-0.01	3.05
09DEC87	17:30	2.88	-6.72	-10.78	4.06	7.30	-18.25	372	281	-0.90	-0.11	-0.01	3.06
09DEC87	17:34	2.94	-7.33	-11.41	4.09	7.41	-18.50	372	281	-0.90	-0.11	-0.01	3.02
09DEC87	17:38	3.05	-7.56	-11.88	4.31	6.64	-18.56	374	272	-0.90	-0.11	-0.01	3.05
09DEC87	17:42	2.83	-6.66	-10.66	3.97	6.95	-17.69	374	275	-0.90	-0.11	-0.01	2.98
09DEC87	17:46	2.88	-6.97	-11.09	4.03	7.44	-18.38	372	282	-0.10	-0.01	-0.01	4.13
09DEC87	17:50	3.09	-7.91	-12.31	4.36	6.86	-18.75	373	276	-0.59	-0.07	-0.01	4.00
09DEC87	17:54	3.01	-7.23	-11.50	4.23	6.92	-18.50	376	274	-0.90	-0.11	-0.01	3.92
09DEC87	17:58	2.91	-6.81	-10.81	4.05	6.63	-17.31	376	281	-0.90	-0.11	-0.01	3.84
09DEC87	18:02	2.95	-6.31	-10.97	4.14	6.50	-17.88	373	275	-0.90	-0.11	-0.01	3.76

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DST CLTR GAS DF P IN H2O	ABSR IN GAS P IN H2O	ABSR OUT GAS P IN H2O	ABSR GAS DIFF P IN H2O	BGHSE DIFF P IN H2O	ID FAN SUCT P IN H2O	ABSR IN GAS T DEG F	ABSR OUT GAS T DEG F	OUTLET GAS SO2 PPMV	CORRTD GAS SO2 %	OUTLET GAS NOX PPMV	LIME SLRY FEED GPM
09DEC87	18:06	2.87	-6.98	-11.06	3.99	7.19	-18.13	371	274	1.32	0.16	-0.01	3.73
09DEC87	18:10	3.14	-7.98	-12.47	4.34	7.63	-19.38	371	281	0.16	0.02	-0.01	3.71
09DEC87	18:14	3.34	-7.63	-12.22	4.63	6.97	-19.44	370	280	-0.90	-0.11	-0.01	3.67
09DEC87	18:18	3.47	-8.16	-13.09	4.81	8.28	-21.06	370	272	-0.90	-0.11	-0.01	3.62
09DEC87	18:22	3.49		-13.47	4.83	8.50	-21.56	374	280	-0.90	-0.11	-0.01	3.60
09DEC87	18:26	3.27		-12.34	4.80	7.02	-20.06	378	282	0.69	0.08	-0.01	3.59
09DEC87	18:30	3.09	-7.14	-11.59	4.25	7.36	-19.00	378	271	0.22	0.03	-0.01	3.62
*09DEC87	18:34	3.06	-7.30	-11.63	4.22	7.45	-18.94	376	273	-0.74	-0.09	-0.01	3.56
*09DEC87	18:38	0.29	-2.09	-2.77	0.78	2.18	-5.53	372	279	-0.90	-0.11	-0.01	0.00
*09DEC87	18:42	0.11	-1.26	-1.78	0.53	1.72	-3.73	363	264	-0.90	-0.11	-0.01	0.00
*09DEC87	18:46	0.10	-1.15	-1.65	0.50	1.54	-3.43	355	273	-0.90	-0.11	-0.01	0.00
	AVERAGE	3.02	-7.20	-11.49	4.24	7.16	-18.71	374	277	-0.43	-0.05	-0.01	2.91

* = NON-TEST PERIOD, NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DILUTION WATER GPM	ST IN STM PRESS PSIG	DILUTION WATER GPM	BHSE OUT GAS T DEG F	BGHSE DIFF P IN H2O	STACK CO PPMV	STACK OPACITY %	STACK CO2 %	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS
		FI3200	PI200A	FI3200	TI3800	DPI3809	AI370A	AI370B	AI370C	IIL320	IIH320	IIL320	IIL320
*09DEC87	15:18	4.30	-2	4.30	268	7.81	59.25	49.88	3.18	0.01	98.75	0.01	0.01
*09DEC87	15:22	5.22	-6	5.22	275	7.83	55.50	48.63	2.89	0.01	97.25	0.01	0.01
*09DEC87	15:26	10.84	-5	10.84	277	6.83	58.00	49.88	2.98	0.01	99.00	0.01	0.01
09DEC87	15:30	8.34	-6	8.34	269	8.16	79.50	49.88	3.98	0.01	102.50	0.01	0.01
09DEC87	15:34	5.00	-7	5.00	269	8.13	68.25	49.88	3.45	0.01	100.50	0.01	0.01
09DEC87	15:38	8.63	-2	8.63	274	6.67	61.38	49.88	2.49	0.01	97.50	0.01	0.01
09DEC87	15:42	9.69	-7	9.69	271	7.44	63.88	49.88	2.69	0.01	98.00	0.01	0.01
09DEC87	15:46	5.08	-8	5.08	266	7.70	63.00	49.88	3.18	0.01	98.50	0.01	0.01
09DEC87	15:50	4.84	-3	4.84	270	6.41	54.88	49.88	2.66	0.01	97.00	0.01	0.01
09DEC87	15:54	9.34	-8	9.34	274	7.41	52.50	49.88	2.59	0.01	97.25	0.01	0.01
09DEC87	15:58	8.28	-8	8.28	268	7.72	57.00	49.88	2.59	0.01	98.50	0.01	0.01
09DEC87	16:02	4.95	-8	4.95	267	6.75	60.25	49.88	2.98	0.01	98.50	0.01	0.01
09DEC87	16:06	8.06	-7	8.06	271	7.05	54.50	49.88	2.49	0.01	96.25	0.01	0.01
09DEC87	16:10	9.34	-8	9.34	268	7.14	55.38	49.88	2.49	0.01	97.50	0.01	0.01
09DEC87	16:14	5.41	-8	5.41	264	6.47	56.00	49.88	2.80	0.01	98.00	0.01	0.01
09DEC87	16:18	5.20	-8	5.20	268	7.38	49.13	49.88	2.69	0.01	97.00	0.01	0.01
09DEC87	16:22	9.47	-8	9.47	271	7.27	56.38	40.38	2.89	0.01	96.75	0.01	0.01
09DEC87	16:26	8.50	-8	8.50	266	6.19	56.38	-0.04	2.98	0.01	97.25	0.01	0.01
09DEC87	16:30	4.63		4.63	263	6.73	54.38	-0.04	2.68	0.01	94.50	0.01	0.01
09DEC87	16:34	5.52		5.52	268	7.34	46.50	-0.04	2.28	0.01	95.75	0.01	0.01
09DEC87	16:38	9.72		9.72	270	6.59	54.38	-0.04	2.88	0.01	98.25	0.01	0.01
09DEC87	16:42	8.22		8.22	265	7.27	56.50	-0.04	2.89	0.01	98.50	0.01	0.01
09DEC87	16:46	4.70		4.70	265	7.34	51.00	-0.04	2.38	0.01	97.25	0.01	0.01
09DEC87	16:50	7.67		7.67	270	6.92	55.63	-0.04	2.59	0.01	98.50	0.01	0.01
*09DEC87	16:54	10.13		10.13	269	8.00	56.25	-0.04	2.69	0.01	100.25	0.01	0.01
*09DEC87	16:58	7.20		7.20	265	8.09	56.38	-0.04	2.78	0.01	100.25	0.01	0.01
*09DEC87	17:02	5.81		5.81	267	6.78	56.25	-0.04	2.69	0.01	99.00	0.01	0.01
*09DEC87	17:06	8.94		8.94	270	7.56	58.25	-0.04	2.78	0.01	97.50	0.01	0.01
*09DEC87	17:10	8.28		8.28	267	7.84	63.38	-0.04	2.88	0.01	98.50	0.01	0.01
*09DEC87	17:14	5.61		5.61	265	6.42	56.38	-0.04	2.68	0.01	97.25	0.01	0.01
*09DEC87	17:18	7.03		7.03	267	7.27	57.38	-0.04	2.69	0.01	97.75	0.01	0.01
09DEC87	17:22	8.19		8.19	267	7.22	63.38	-0.04	3.09	0.01	97.50	0.01	0.01
09DEC87	17:26	5.69		5.69	265	6.45	57.38	-0.04	2.98	0.01	97.50	0.01	0.01
09DEC87	17:30	5.27		5.27	266	7.30	52.50	-0.04	2.48	0.01	96.75	0.01	0.01
09DEC87	17:34	7.98		7.98	268	7.41	60.38	-0.04	2.98	0.01	97.50	0.01	0.01
09DEC87	17:38	7.58		7.58	266	6.58	63.50	-0.04	3.28	0.01	98.50	0.01	0.01
09DEC87	17:42	5.33		5.33	265	6.97	50.50	-0.04	2.48	0.01	96.25	0.01	0.01
09DEC87	17:46	6.33		6.33	267	7.44	54.38	-0.04	2.48	0.01	97.00	0.01	0.01
09DEC87	17:50	7.52		7.52	267	6.78	66.25	-0.04	3.48	0.01	98.50	0.01	0.01
09DEC87	17:54	5.70		5.70	265	6.97	66.25	-0.04	3.48	0.01	98.25	0.01	0.01
09DEC87	17:58	6.52		6.52	267	6.55	56.25	-0.04	2.69	0.01	97.25	0.01	0.01

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DILUTION WATER GPM	ST IN STM PRESS PSIG	DILUTION WATER GPM	BHSE OUT GAS T DEG F	BGHSE DIFF P IN H2O	STACK CO PPMV	STACK OPACITY %	STACK CO2 %	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS
09DEC87	18:02	7.00		7.00	266	6.47	64.25	-0.04	2.88	0.01	97.50	0.01	0.01
09DEC87	18:06	5.14		5.14	265	7.19	63.38	-0.04	2.59	0.01	97.00	0.01	0.01
09DEC87	18:10	5.34		5.34	267	7.59	63.38	-0.04	2.48	0.01	98.75	0.01	0.01
09DEC87	18:14	7.80		7.80	268	6.95	65.25	-0.04	2.38	0.01	100.25	0.01	0.01
09DEC87	18:18	6.56		6.56	265	8.31	72.50	-0.04	2.68	0.01	102.75	0.01	0.01
09DEC87	18:22	5.81		5.81	267	8.53	74.25	-0.04	3.28	0.01	102.75	0.01	0.01
09DEC87	18:26	8.53		8.53	269	7.00	78.25	49.88	3.48	0.01	100.25	0.01	0.01
09DEC87	18:30	8.13		8.13	266	7.36	68.25	49.88	2.98	0.01	98.75	0.01	0.01
#09DEC87	18:34	4.75		4.75	264	7.45	60.38	49.88	2.79	0.01	98.00	0.01	0.01
#09DEC87	18:38	5.27		5.27	267	1.99	63.25	-0.04	2.68	21.69	0.09	21.69	21.69
#09DEC87	18:42	0.41		0.41	264	1.54	58.25	1.40	1.98	20.56	0.08	20.56	20.56
#09DEC87	18:46	0.30		0.30	260	1.35	50.50	48.13	1.59	20.56	0.08	20.56	20.56
	AVERAGE	6.95	-7	6.95	268	7.16	60.18	20.19	2.84	0.01	98.12	0.01	0.01

= NON-TEST PERIOD, VALUE NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
12/10/87, 1241-1801
UNIT A

EPA TEST 2

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR STM FLOW KLB/HR	FDWR FLOW KLB/HR	ATTPTR WTR FLOW KLB/HR	TOTAL AIR FLOW KLB/HR	UNDGRT AIR FLOW KLB/HR	OVFR AIR FLOW KLB/HR	SEC AIR FLOW KLB/HR	SPHTR STM P PSIG	MED DRM PRESS PSIG	DSCH HDR PRESS PSIG	BLR FDWR TEMP DEG F	S-SPHTR OUT T DEG F
		FI300	FI341	FI349	FI323	FI323B	FI323A	FI325	PI300	PI341	PI595	TI549	TI349A
10DEC87	12:41	105.25	99.00	2.55	123.00	77.00	73.50	6.02	666	732	1028	363	752
10DEC87	12:45	110.50	99.25	2.53	123.50	77.00	73.25	6.00	672	744	1028	364	758
10DEC87	12:49	106.00	111.25	2.52	122.25	76.25	73.25	6.14	656	718	1006	355	752
10DEC87	12:53	98.00	104.50	2.73	121.75	77.25	74.25	6.02	652	712	1052	352	738
10DEC87	12:57	111.00	89.00	2.78	123.25	76.75	74.00	6.00	656	730	1084	353	742
10DEC87	13:01	109.75	108.50	2.83	120.50	75.50	73.50	6.08	668	738	1096	364	756
10DEC87	13:05	107.50	102.75	2.59	121.75	75.00	73.00	5.95	682	754	1048	364	760
10DEC87	13:09	110.25	102.75	2.34	120.50	74.25	73.00	6.08	698	768	994	364	768
10DEC87	13:13	113.75	105.25	2.49	118.00	72.50	73.00	6.20	704	774	1008	365	772
10DEC87	13:17	110.00	113.25	2.62	114.00	68.75	73.00	6.28	672	736	994	362	754
10DEC87	13:21	102.25	107.00	2.75	118.75	67.75	73.50	6.02	658	720	1018	358	738
10DEC87	13:25	108.00	94.75	2.84	124.00	68.50	73.75	5.97	672	742	1060	364	744
10DEC87	13:29	110.25	100.75	2.68	124.50	68.75	73.25	5.86	698	770	1040	366	760
10DEC87	13:33	110.25	110.75	2.47	120.75	69.25	72.75	6.11	700	770	984	365	768
10DEC87	13:37	111.75	110.75	2.63	119.00	70.00	72.75	6.20	686	752	984	364	762
10DEC87	13:41	103.75	112.00	2.88	118.00	71.75	72.75	6.05	658	720	1010	359	742
10DEC87	13:45	105.50	99.25	3.01	122.75	72.75	73.00	5.98	660	726	1048	359	738
10DEC87	13:49	109.25	101.50	2.96	124.50	73.00	73.25	5.97	660	728	1048	360	746
10DEC87	13:53	106.50	105.50	2.98	127.00	74.25	73.50	5.88	660	728	1052	358	746
10DEC87	13:57	110.25	99.75	2.95	129.50	76.75	73.50	5.77	682	756	1064	365	754
10DEC87	14:01	111.50	108.25	2.70	122.75	78.50	73.00	6.13	702	770	1010	365	770
10DEC87	14:05	109.75	106.75	2.72	121.25	79.00	73.00	6.05	700	766	996	365	762
10DEC87	14:09	108.75	106.00	2.84	119.25	77.75	72.25	6.03	688	754	1002	364	754
10DEC87	14:13	107.00	105.25	2.98	120.75	76.75	72.75	6.02	664	726	1012	362	742
*10DEC87	14:17	78.50	114.00	2.97	129.00	77.75	64.50	5.86	648	680	1004	353	730
*10DEC87	14:21	102.50	32.38	3.31	125.50	79.25	74.00	6.08	664	732	1136	365	730
*10DEC87	14:25	111.00	87.75	2.88	122.75	79.75	73.25	6.06	688	760	1056	364	758
10DEC87	14:29	107.50	107.75	2.77	118.00	78.50	72.75	6.09	684	746	1010	364	764
10DEC87	14:33	108.75	102.50	2.84	120.75	79.00	73.25	6.06	666	732	1014	362	746
10DEC87	14:37	108.25	101.50	2.89	122.25	79.25	73.25	5.97	662	732	1028	361	742
10DEC87	14:41	109.25	102.75	2.89	123.50	75.00	73.00	5.92	682	752	1040	365	754
10DEC87	14:45	118.25	99.50	2.94	129.00	73.75	73.00	17.38	706	788	1052	367	770
10DEC87	14:49	108.75	113.00	2.66	120.00	71.75	73.00	11.63	702	762	970	365	776
10DEC87	14:53	107.50	115.00	2.95	128.50	71.00	71.75	22.75	658	722	964	355	760
10DEC87	14:57	105.75	105.00	3.34	145.50	71.25	74.00	28.69	666	732	1064	362	730
10DEC87	15:01	113.75	87.50	3.15	128.00	71.75	73.50	6.19	700	778	1072	367	744
10DEC87	15:05	114.00	113.00	2.71	120.75	70.25	72.75	6.30	700	770	982	363	764
10DEC87	15:09	108.00	113.00	2.88	117.75	70.25	72.50	6.27	682	744	988	363	748
10DEC87	15:13	108.50	113.25	2.97	118.50	72.25	72.75	6.20	672	738	1006	362	740
10DEC87	15:17	108.25	99.50	3.09	119.50	72.50	73.00	6.13	662	730	1028	361	740
10DEC87	15:21	109.00	100.25	3.08	121.75	71.25	73.00	6.09	668	738	1036	363	746

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR STM FLOW KLB/HR	FDWR FLOW KLB/HR	ATTPTR WTR FLOW KLB/HR	TOTAL AIR FLOW KLB/HR	UNDGRT AIR FLOW KLB/HR	OVFR AIR FLOW KLB/HR	SEC AIR FLOW KLB/HR	SPHTR STM P PSIG	MED DRM PRESS PSIG	DSCH HDR PRESS PSIG	BLR FDWR TEMP DEG F	S-SPHTR OUT T DEG F
10DEC87	15:25	105.75	106.25	3.00	123.00	71.25	73.00	6.06	676	742	1028	364	748
10DEC87	15:29	113.00	98.75	2.96	123.75	73.25	73.25	6.13	692	766	1032	366	756
10DEC87	15:33	112.50	111.75	2.82	119.50	73.25	73.00	6.28	696	764	1000	365	762
10DEC87	15:37	106.75	113.00	2.95	118.25	72.75	73.25	6.27	666	728	996	362	746
10DEC87	15:41	105.75	102.00	3.04	121.50	73.50	73.50	6.11	660	728	1024	360	734
*10DEC87	15:53	116.25	110.00	2.77	118.75	73.75	72.75	6.27	706	782	996	366	770
*10DEC87	15:57	107.75	113.00	2.92	115.25	72.25	72.50	6.39	684	744	988	364	756
*10DEC87	16:01	104.00	112.50	3.02	119.00	72.50	73.25	6.14	658	718	1000	359	728
*10DEC87	16:05	111.25	91.00	3.19	122.50	72.25	74.00	6.16	664	738	1060	361	734
*10DEC87	16:09	108.50	100.50	3.10	121.00	70.75	73.50	6.19	684	752	1060	365	750
*10DEC87	16:13	108.50	106.25	2.80	119.75	69.50	73.50	6.25	680	742	1004	364	748
*10DEC87	16:17	106.00	104.50	2.82	119.00	71.25	73.50	6.19	660	724	1002	361	736
*10DEC87	16:21	109.75	100.00	2.92	120.25	72.75	73.50	6.14	666	740	1040	363	742
*10DEC87	16:25	112.00	107.50	2.85	118.50	70.75	73.50	6.33	672	738	1028	364	752
10DEC87	16:29	103.50	107.00	2.82	121.50	71.00	73.25	6.03	660	722	1018	361	740
10DEC87	16:33	110.25	99.25	2.82	123.75	72.25	73.75	6.09	658	730	1032	357	742
10DEC87	16:37	109.25	102.50	2.97	125.50	73.75	73.50	6.03	664	736	1068	362	748
10DEC87	16:41	113.50	99.50	2.82	123.75	74.50	73.00	6.06	702	778	1056	367	762
10DEC87	16:45	120.75	108.00	2.56	119.00	73.75	73.00	6.28	690	766	988	364	766
10DEC87	16:49	100.50	113.25	2.74	117.25	72.25	73.25	6.28	650	710	984	346	736
10DEC87	16:53	105.75	112.50	3.05	120.75	71.75	73.75	6.03	652	718	1076	345	730
10DEC87	16:57	115.25	93.50	3.27	120.00	70.25	74.00	6.30	658	736	1140	356	748
10DEC87	17:01	112.25	108.00	3.03	116.00	66.25	73.25	6.36	658	728	1080	356	754
10DEC87	17:05	106.75	102.00	2.89	119.50	65.50	73.50	6.14	660	728	1056	359	746
10DEC87	17:09	108.50	102.75	2.72	119.25	68.25	73.50	6.22	662	728	1032	360	744
10DEC87	17:13	102.75	100.00	2.66	125.75	69.50	73.75	5.95	670	736	1032	363	746
10DEC87	17:17	100.75	102.75	2.57	135.00	71.25	74.25	5.67	654	714	1008	356	738
10DEC87	17:21	100.50	95.00	2.71	145.50	77.25	75.50	5.56	656	720	1056	357	734
10DEC87	17:25	111.50	86.50	2.67	139.50	83.75	74.25	5.72	688	768	1088	366	748
10DEC87	17:29	106.25	109.50	2.34	139.00	87.00	74.50	5.80	710	778	1016	366	770
10DEC87	17:33	112.75	98.00	2.17	129.00	90.25	72.50	5.98	712	788	970	365	768
10DEC87	17:37	113.00	113.50	2.38	125.50	89.75	72.25	6.17	708	794	988	365	774
10DEC87	17:41	111.25	112.75	2.54	121.25	86.50	72.75	6.28	696	760	980	364	760
10DEC87	17:45	100.75	113.00	2.75	121.00	82.50	73.00	6.02	656	716	998	357	732
10DEC87	17:49	109.25	112.75	2.73	125.75	80.75	73.25	6.05	674	748	1032	363	736
10DEC87	17:53	112.75	99.00	2.74	123.50	78.00	73.00	6.14	702	776	1040	367	766
10DEC87	17:57	106.00	111.00	2.66	116.00	74.25	72.50	6.36	666	720	984	361	752
*10DEC87	18:01	85.25	102.25	2.78	115.00	73.25	72.00	6.23	648	692	1016	351	722
	AVERAGE	108.63	104.71	2.79	123.24	74.50	73.23	6.92	676	744	1026	362	751

* = NON-TEST PERIOD, VALUE NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SAT TEMP DEG F	BLR FDWR TEMP DEG F	S-SPHTR IN TEMP DEG F	ECON OUT FDWTR T DEG F	FCE PRESS PSIG	FCE PRESS PSIG	FCE PRESS PSIG	UNDGRT AIR PRESS IN H2O	WNDBOX PRESS IN H2O	AH AIR OUT P IN H2O	OVFR AIR FAN P IN H2O	AH AIR DIFF P IN H2O
		TI349C	TI549	TI349B	TI347	PI322A	PI322B	PI322C	PI366	PI365	PI318	PIC316	DPI318
#10DEC87	12:41	503	363	618	466				-0.81	-1.50	5.97	25.63	0.68
10DEC87	12:45	504	364	624	472				-0.97	-1.65	5.88	25.44	0.69
10DEC87	12:49	501	355	616	468				-1.00	-1.63	6.06	25.63	0.69
10DEC87	12:53	500	352	598	458				-0.80	-1.42	6.00	25.75	0.68
10DEC87	12:57	502	353	614	463				-0.94	-1.57	5.88	25.63	0.68
10DEC87	13:01	503	364	620	466				-0.96	-1.56	6.00	25.63	0.68
10DEC87	13:05	505	364	624	459				-0.78	-1.41	5.92	25.56	0.68
10DEC87	13:09	508	364	638	471				-1.06	-1.66	6.00	25.44	0.68
10DEC87	13:13	509	365	634	471				-1.10	-1.63	6.13	25.50	0.65
10DEC87	13:17	504	362	616	462				-1.17	-1.65	6.06	25.50	0.61
10DEC87	13:21	501	358	604	456				-0.96	-1.53	5.72	25.44	0.66
10DEC87	13:25	504	364	616	465				-0.69	-1.36	5.92	25.63	0.69
10DEC87	13:29	508	366	634	472				-0.75	-1.44	5.94	25.56	0.70
10DEC87	13:33	508	365	636	472				-1.03	-1.65	6.00	25.44	0.67
10DEC87	13:37	506	364	626	468				-1.12	-1.70	6.09	25.50	0.66
10DEC87	13:41	501	359	604	459				-0.91	-1.51	5.88	25.50	0.64
10DEC87	13:45	501	359	608	462				-0.87	-1.57	5.86	25.50	0.69
10DEC87	13:49	502	360	618	467				-0.87	-1.58	5.95	25.56	0.70
10DEC87	13:53	502	358	612	466				-0.61	-1.36	5.94	25.63	0.71
10DEC87	13:57	505	365	622	468				-0.67	-1.45	5.86	25.50	0.73
10DEC87	14:01	508	365	638	474				-0.99	-1.61	6.23	25.63	0.69
10DEC87	14:05	508	365	622	470				-0.97	-1.56	6.00	25.50	0.68
10DEC87	14:09	506	364	618	466				-1.07	-1.66	5.92	25.44	0.67
10DEC87	14:13	502	362	606	464				-0.75	-1.36	6.03	25.63	0.67
#10DEC87	14:17	497	353	588	456				-0.48	-1.41	6.08	28.31	0.74
#10DEC87	14:21	502	365	604	472				-0.91	-1.59	6.13	25.88	0.72
#10DEC87	14:25	506	364	640	482				-1.06	-1.70	6.06	25.50	0.70
#10DEC87	14:29	505	364	624	479				-1.09	-1.68	5.94	25.44	0.65
10DEC87	14:33	503	362	610	466				-1.05	-1.71	5.86	25.44	0.68
10DEC87	14:37	502	361	614	465				-0.71	-1.43	5.98	25.63	0.69
10DEC87	14:41	505	365	622	469				-0.62	-1.36	6.00	25.63	0.69
10DEC87	14:45	510	367	638	476				-0.91	-0.58	5.86	25.44	0.73
10DEC87	14:49	508	365	628	473				-1.26	-1.70	6.20	25.56	0.67
10DEC87	14:53	502	355	604	463				-0.93	-0.25	4.39	24.81	0.70
10DEC87	14:57	503	362	598	461				-0.53	0.54	5.64	25.69	0.87
10DEC87	15:01	509	367	628	474				-0.91	-1.73	6.17	25.63	0.73
10DEC87	15:05	509	363	634	482				-1.15	-1.81	6.13	25.38	0.68
10DEC87	15:09	505	363	608	467				-1.19	-1.79	5.91	25.38	0.64
10DEC87	15:13	504	362	606	458				-0.90	-1.52	5.94	25.56	0.66
10DEC87	15:17	502	361	608	461				-0.83	-1.46	5.94	25.63	0.66
10DEC87	15:21	503	363	612	467				-0.81	-1.52	5.92	25.56	0.67

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SAT TEMP DEG F	BLR FDWR TEMP DEG F	S-SPHTR IN TEMP DEG F	ECON OUT FDWTR T DEG F	FCE PRESS PSIG	FCE PRESS PSIG	FCE PRESS PSIG	UNDGRT AIR PRESS IN H20	WNDBOX PRESS IN H20	AH AIR OUT P IN H20	OVFR AIR FAN P IN H20	AH AIR DIFF P IN H20
10DEC87	15:25	504	364	616	468				-0.74	-1.46	5.95	25.63	0.69
10DEC87	15:29	507	366	624	472				-0.66	-1.41	6.13	25.75	0.70
10DEC87	15:33	508	365	628	472				-1.02	-1.68	6.09	25.56	0.66
10DEC87	15:37	503	362	608	462				-0.91	-1.57	5.98	25.63	0.66
10DEC87	15:41	502	360	604	461				-0.65	-1.37	5.91	25.69	0.67
10DEC87	15:49	509	367	630	474				-0.63	-1.44	6.06	25.69	0.71
#10DEC87	15:57	506	364	614	466				-1.32	-1.91	6.00	25.38	0.64
#10DEC87	16:01	501	359	596	456				-0.74	-1.40	5.94	25.69	0.66
#10DEC87	16:05	503	361	610	465				-0.66	-1.39	6.08	25.81	0.69
#10DEC87	16:09	506	365	616	469				-0.98	-1.67	5.92	25.56	0.67
#10DEC87	16:13	505	364	616	468				-0.93	-1.57	6.05	25.69	0.65
#10DEC87	16:17	502	361	606	465				-0.81	-1.41	6.02	25.75	0.65
#10DEC87	16:21	503	363	612	467				-0.87	-1.52	5.91	25.63	0.66
#10DEC87	16:25	504	364	620	468				-1.10	-1.69	6.11	25.69	0.65
#10DEC87	16:29	501	361	602	462				-0.72	-1.34	5.86	25.69	0.67
10DEC87	16:33	502	357	612	467				-0.80	-1.49	6.02	25.75	0.69
10DEC87	16:37	503	362	614	469				-0.68	-1.40	5.98	25.69	0.71
10DEC87	16:41	509	367	632	472				-0.67	-1.36	6.16	25.75	0.70
10DEC87	16:45	508	364	634	474				-1.13	-1.70	6.16	25.56	0.67
10DEC87	16:49	499	346	594	462				-1.07	-1.64	5.92	25.56	0.64
10DEC87	16:53	500	345	600	455				-0.66	-1.31	5.89	25.75	0.67
10DEC87	16:57	502	356	620	459				-0.96	-1.59	6.09	25.75	0.66
10DEC87	17:01	502	356	618	461				-1.24	-1.78	5.95	25.56	0.63
10DEC87	17:05	502	359	608	459				-0.81	-1.45	5.97	25.69	0.66
10DEC87	17:09	502	360	618	461				-1.09	-1.71	5.92	25.56	0.65
10DEC87	17:13	503	363	614	463				-0.56	-1.32	5.84	25.69	0.70
10DEC87	17:17	500	356	610	464				-0.31	-1.22	5.70	25.63	0.77
10DEC87	17:21	500	357	604	471				-0.06	-1.20	5.98	26.00	0.87
10DEC87	17:25	506	366	626	481				-0.36	-1.33	6.05	25.81	0.82
10DEC87	17:29	509	366	644	483				-0.48	-1.46	6.17	25.75	0.84
10DEC87	17:33	510	365	640	482				-0.78	-1.54	6.02	25.44	0.74
10DEC87	17:37	511	365	638	482				-1.13	-1.86	6.00	25.25	0.71
10DEC87	17:41	507	364	620	470				-1.21	-1.82	6.08	25.38	0.69
10DEC87	17:45	500	357	594	458				-0.80	-1.43	5.81	25.50	0.67
10DEC87	17:49	504	363	612	459				-0.76	-1.48	5.94	25.63	0.71
10DEC87	17:53	509	367	632	467				-0.79	-1.49	6.17	25.69	0.69
10DEC87	17:57	503	361	610	467				-1.26	-1.78	6.03	25.44	0.64
#10DEC87	18:01	498	351	576	456				-1.16	-1.69	5.80	25.19	0.63
	AVERAGE	504	362	618	467				-0.86	-1.47	5.96	25.57	0.69

= NON-TEST PERIOD, NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	ECON IN GAS T DEG F	ECON OUT GAS T DEG F	AH OUT GAS T DEG F	AIR HTR IN AIR T DEG F	GEN PWR KW	AH OUT AIR T DEG F	SHTR FLUE GAS DIF P IN H2O	SHTR GAS DIFF P IN H2O	ECON GAS DIFF P IN H2O	AH GAS DIFF P IN H2O	WNDBX-FCE DF P IN H2O	UNDGRT-FCE DF P IN H2O
		TI346	TI348	TI327A	TI327B	JI701A	TI329	DPI368	DPI368	DPI369	DPI370	DPI365A	DPI366A
*10DEC87	12:41	780	520	360	68	22464	365	0.33	0.33	1.70	1.89	-0.34	0.35
10DEC87	12:45	790	526	363	68	22592	365	0.39	0.39	1.71	1.98	-0.35	0.34
10DEC87	12:49	766	514	361	68	20032	368	0.35	0.35	1.60	1.88	-0.33	0.30
10DEC87	12:53	768	509	355	68	19072	361	0.30	0.30	1.62	1.82	-0.34	0.28
10DEC87	12:57	792	520	358	68	19584	361	0.39	0.39	1.70	1.94	-0.34	0.29
10DEC87	13:01	788	518	360	69	22720	365	0.34	0.34	1.66	1.88	-0.35	0.25
10DEC87	13:05	792	522	362	69	23168	368	0.33	0.33	1.70	1.89	-0.34	0.29
10DEC87	13:09	798	526	366	69	23360	371	0.38	0.38	1.68	1.95	-0.35	0.26
10DEC87	13:13	792	524	366	68	23616	372	0.33	0.33	1.66	1.87	-0.34	0.19
10DEC87	13:17	766	512	362	69	22336	372	0.30	0.30	1.53	1.77	-0.34	0.14
10DEC87	13:21	766	512	358	69	20992	365	0.31	0.31	1.59	1.80	-0.34	0.23
10DEC87	13:25	784	520	360	68	22720	362	0.34	0.34	1.65	1.86	-0.34	0.33
10DEC87	13:29	794	528	364	68	23680	367	0.36	0.36	1.70	1.91	-0.34	0.35
10DEC87	13:33	786	528	367	68	23552	371	0.38	0.38	1.74	2.00	-0.34	0.28
10DEC87	13:37	774	520	366	68	22784	373	0.34	0.34	1.64	1.89	-0.33	0.25
10DEC87	13:41	762	512	361	68	20928	370	0.33	0.33	1.56	1.80	-0.34	0.26
10DEC87	13:45	776	518	360	68	21120	365	0.34	0.34	1.69	1.93	-0.34	0.37
10DEC87	13:49	780	520	361	68	21184	366	0.36	0.36	1.69	1.92	-0.34	0.38
10DEC87	13:53	782	520	360	68	21632	363	0.35	0.35	1.70	1.91	-0.33	0.42
10DEC87	13:57	806	530	364	68	23168	364	0.40	0.40	1.85	2.05	-0.34	0.43
10DEC87	14:01	794	528	368	68	23680	372	0.36	0.36	1.70	1.95	-0.34	0.28
10DEC87	14:05	790	524	367	68	23360	372	0.35	0.35	1.65	1.89	-0.34	0.26
10DEC87	14:09	786	522	366	69	22976	373	0.34	0.34	1.66	1.90	-0.34	0.24
10DEC87	14:13	772	516	362	69	21824	369	0.32	0.32	1.58	1.81	-0.33	0.27
*10DEC87	14:17	718	501	354	68	18944	362	0.32	0.32	1.60	1.89	-0.31	0.61
*10DEC87	14:21	792	528	359	68	22592	358	0.40	0.40	1.82	2.05	-0.34	0.34
*10DEC87	14:25	798	532	368	68	23296	369	0.38	0.38	1.75	1.99	-0.34	0.31
*10DEC87	14:29	770	520	366	69	22912	375	0.34	0.34	1.59	1.86	-0.34	0.25
10DEC87	14:33	778	520	363	68	22144	369	0.34	0.34	1.70	1.94	-0.34	0.32
10DEC87	14:37	786	522	363	69	22144	368	0.34	0.34	1.65	1.87	-0.34	0.39
10DEC87	14:41	792	526	364	68	23040	368	0.36	0.36	1.69	1.87	-0.33	0.40
10DEC87	14:45	810	538	370	68	23936	371	0.37	0.37	1.83	2.02	0.59	0.27
10DEC87	14:49	792	524	370	68	23232	376	0.36	0.36	1.63	1.93	-0.23	0.20
10DEC87	14:53	774	516	366	63	20736	374	0.36	0.36	1.64	1.91	0.88	0.21
10DEC87	14:57	782	526	361	66	22080	357	0.41	0.41	1.96	2.17	1.48	0.41
10DEC87	15:01	818	540	369	67	23936	368	0.45	0.45	1.86	2.11	-0.34	0.48
10DEC87	15:05	786	530	371	68	23360	378	0.36	0.36	1.69	1.96	-0.34	0.33
10DEC87	15:09	780	520	366	68	22464	376	0.33	0.33	1.64	1.90	-0.34	0.26
10DEC87	15:13	784	518	363	68	22144	371	0.35	0.35	1.59	1.83	-0.34	0.29
10DEC87	15:17	782	518	361	67	21888	369	0.32	0.32	1.61	1.81	-0.33	0.30
10DEC87	15:21	790	524	362	66	22336	369	0.35	0.35	1.69	1.92	-0.34	0.37

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	ECON IN GAS T DEG F	ECON OUT GAS T DEG F	AH OUT GAS T DEG F	AIR HTR IN AIR T DEG F	GEN PWR KW	AH OUT AIR T DEG F	SHTR FLUE GAS DIF P IN H20	SHTR GAS DIFF P IN H20	ECON GAS DIFF P IN H20	AH GAS DIFF P IN H20	WNDBX-FCE DF P IN H20	UNDGRT-FCE DF P IN H20
10DEC87	15:25	786	522	363	66	22784	369	0.38	0.38	1.64	1.88	-0.33	0.39
10DEC87	15:29	804	530	365	63	23296	368	0.35	0.35	1.73	1.89	-0.34	0.42
10DEC87	15:33	792	526	366	65	23296	372	0.34	0.34	1.66	1.90	-0.33	0.33
10DEC87	15:37	766	514	361	64	22144	369	0.33	0.33	1.55	1.80	-0.33	0.33
10DEC87	15:41	774	518	359	64	21760	364	0.33	0.33	1.62	1.80	-0.33	0.39
10DEC87	15:49	808	532	366	64	23808	369	0.39	0.39	1.75	1.98	-0.33	0.48
*10DEC87	15:57	770	518	367	64	22720	378	0.34	0.34	1.57	1.84	-0.34	0.24
*10DEC87	16:01	780	512	359	63	20800	369	0.33	0.33	1.55	1.77	-0.33	0.33
*10DEC87	16:05	794	524	360	63	22272	363	0.34	0.34	1.70	1.89	-0.34	0.39
*10DEC87	16:09	790	526	362	63	23232	368	0.33	0.33	1.71	1.92	-0.34	0.35
*10DEC87	16:13	776	520	362	63	22592	368	0.34	0.34	1.59	1.84	-0.34	0.31
*10DEC87	16:17	772	516	359	63	21568	368	0.32	0.32	1.59	1.81	-0.33	0.28
*10DEC87	16:21	796	524	361	62	22400	367	0.35	0.35	1.70	1.92	-0.34	0.31
*10DEC87	16:25	782	520	363	62	22464	370	0.34	0.34	1.60	1.84	-0.34	0.25
*10DEC87	16:29	790	516	359	62	21504	366	0.33	0.33	1.59	1.81	-0.33	0.29
10DEC87	16:33	792	524	361	62	20864	364	0.35	0.35	1.73	1.93	-0.34	0.35
10DEC87	16:37	798	526	362	62	22464	364	0.39	0.39	1.72	1.96	-0.34	0.39
10DEC87	16:41	810	534	367	62	23808	371	0.38	0.38	1.76	1.97	-0.34	0.35
10DEC87	16:45	796	530	369	62	22848	376	0.35	0.35	1.74	1.98	-0.34	0.24
10DEC87	16:49	764	512	360	63	18048	369	0.33	0.33	1.59	1.84	-0.34	0.23
10DEC87	16:53	780	512	357	63	17984	364	0.33	0.33	1.64	1.84	-0.33	0.31
10DEC87	16:57	798	522	361	63	20480	365	0.35	0.35	1.71	1.93	-0.35	0.29
10DEC87	17:01	782	518	362	62	20544	371	0.36	0.36	1.59	1.86	-0.34	0.20
10DEC87	17:05	780	516	359	62	21440	367	0.33	0.33	1.60	1.81	-0.33	0.31
10DEC87	17:09	778	518	359	61	22080	366	0.33	0.33	1.64	1.86	-0.34	0.27
10DEC87	17:13	780	520	358	61	22528	363	0.37	0.37	1.65	1.87	-0.33	0.43
10DEC87	17:17	768	518	355	61	20160	357	0.37	0.37	1.70	1.94	-0.32	0.59
10DEC87	17:21	786	528	355	60	21120	349	0.40	0.40	1.96	2.18	-0.32	0.81
10DEC87	17:25	824	544	365	61	23552	357	0.51	0.51	1.97	2.23	-0.33	0.63
10DEC87	17:29	806	540	370	60	24256	367	0.42	0.42	1.96	2.22	-0.34	0.64
10DEC87	17:33	816	540	372	61	23680	372	0.40	0.40	1.89	2.13	-0.34	0.42
10DEC87	17:37	830	542	377	60	23616	378	0.45	0.45	1.89	2.17	-0.35	0.37
10DEC87	17:41	792	526	371	62	22912	379	0.36	0.36	1.71	1.97	-0.34	0.27
10DEC87	17:45	772	514	361	62	20992	370	0.33	0.33	1.61	1.83	-0.33	0.30
10DEC87	17:49	810	526	363	62	22784	364	0.41	0.41	1.77	1.98	-0.34	0.38
10DEC87	17:53	810	532	367	62	23744	370	0.39	0.39	1.71	1.94	-0.34	0.36
10DEC87	17:57	764	514	365	103	21824	374	0.32	0.32	1.57	1.85	-0.34	0.18
*10DEC87	18:01	748	502	367	125	19200	377	0.29	0.29	1.55	1.83	-0.33	0.21
	AVERAGE	788	523	363	66	22224	368	0.36	0.36	1.69	1.93	-0.27	0.34

* = NON-TEST PERIOD, NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR OUT GAS P IN H2O	AH IN GAS P IN H2O	AH OUT GAS P IN H2O	EXCESS 02 %	EXCESS 02 %	GAS FLOW KSCFH	STM TRBN IN STM T DEG F	FUEL OIL FLOW GPM	TOT HEAT RELEASE MBTUH	RDF HEAT RELEASE MBTUH	FDR A SPEED %	FDR B SPEED %
		PI368	PI369	PI370	AI321A	AI321B	FI332	TI101	FI333	UI399	UI399A	SI301	SI302
*10DEC87	12:41	-1.82	-3.69	-5.75	5.61	7.91	-0.04	756	-0.01	149.00	149.00	60.50	72.00
10DEC87	12:45	-1.56	-3.40	-5.30	5.44	7.72	-0.04	758	-0.01	158.50	158.50	60.50	72.00
10DEC87	12:49	-1.39	-2.91	-4.72	7.14	9.56	-0.04	754	-0.01	145.50	145.50	57.25	69.00
10DEC87	12:53	-1.77	-3.59	-5.56	6.75	9.09	-0.04	748	-0.01	134.00	134.00	58.00	69.50
10DEC87	12:57	-1.33	-3.02	-4.86	5.20	7.34	-0.04	746	-0.01	164.00	164.50	59.88	71.50
10DEC87	13:01	-1.57	-3.38	-5.31	5.50	7.69	-0.04	752	-0.01	153.00	153.00	56.25	67.75
10DEC87	13:05	-1.80	-3.54	-5.53	5.13	7.38	-0.04	764	-0.01	151.00	151.50	59.38	70.75
10DEC87	13:09	-1.48	-3.26	-5.14	5.20	7.44	-0.04	770	-0.01	157.50	157.50	55.38	66.75
10DEC87	13:13	-1.70	-3.26	-5.14	5.22	7.50	-0.04	776	-0.01	162.50	162.50	49.75	61.38
10DEC87	13:17	-1.79	-3.56	-5.36	6.39	8.84	-0.04	758	-0.01	151.50	151.50	44.50	55.25
10DEC87	13:21	-1.44	-3.05	-4.88	6.33	8.72	-0.04	740	-0.01	139.00	139.50	52.38	63.88
10DEC87	13:25	-1.35	-3.08	-5.00	5.13	7.45	-0.04	746	-0.01	155.00	155.00	60.38	72.00
10DEC87	13:29	-1.38	-3.16	-5.16	5.13	7.45	-0.04	764	-0.01	157.50	157.50	61.88	73.50
10DEC87	13:33	-1.45	-3.17	-5.11	5.81	8.28	-0.04	772	-0.01	153.50	153.50	55.25	66.50
10DEC87	13:37	-1.59	-3.12	-5.00	6.20	8.63	-0.04	764	-0.01	156.00	156.00	51.75	63.13
10DEC87	13:41	-1.26	-2.68	-4.41	6.39	8.91	-0.04	746	-0.01	140.00	140.00	52.50	63.98
10DEC87	13:45	-1.42	-2.89	-4.72	5.89	8.41	-0.04	738	-0.01	148.50	148.50	61.63	73.25
10DEC87	13:49	-1.58	-3.49	-5.44	6.16	8.59	-0.04	742	-0.01	155.00	155.00	64.00	75.50
10DEC87	13:53	-1.43	-3.17	-5.03	5.95	8.34	-0.04	746	-0.01	148.50	148.50	70.50	82.00
10DEC87	13:57	-1.58	-3.26	-5.30	4.94	7.13	-0.04	758	-0.01	157.00	157.50	73.75	85.25
10DEC87	14:01	-1.73	-3.38	-5.33	6.17	8.53	-0.04	772	-0.01	157.50	157.50	57.88	69.25
10DEC87	14:05	-1.53	-3.13	-5.05	5.56	7.80	-0.04	768	-0.01	153.50	154.00	56.63	68.00
10DEC87	14:09	-1.56	-3.11	-5.02	5.67	7.92	-0.04	760	-0.01	151.50	152.00	55.00	66.25
10DEC87	14:13	-1.40	-3.20	-4.97	6.52	8.91	-0.04	750	-0.01	148.50	149.00	58.00	69.50
*10DEC87	14:17	-1.13	-2.72	-4.59	9.53	12.91	-0.04	738	-0.01	93.25	93.25	82.25	94.25
*10DEC87	14:21	-1.44	-3.06	-5.03	4.81	7.09	-0.04	744	-0.01	172.00	172.00	61.38	73.25
*10DEC87	14:25	-1.68	-3.52	-5.55	5.36	7.80	-0.04	760	-0.01	165.00	165.00	58.63	69.75
*10DEC87	14:29	-1.63	-3.32	-5.08	6.52	9.00	-0.04	766	-0.01	149.50	149.50	52.13	63.38
10DEC87	14:33	-1.69	-3.27	-5.20	5.67	8.13	-0.04	754	-0.01	153.00	153.00	57.13	68.75
10DEC87	14:37	-1.48	-2.92	-4.77	5.52	7.84	-0.04	746	-0.01	152.50	153.00	61.13	73.00
10DEC87	14:41	-1.33	-2.93	-4.83	5.02	7.45	-0.04	756	-0.01	154.50	154.50	63.50	75.00
10DEC87	14:45	-1.74	-3.48	-5.56	4.72	6.94	13.41	770	-0.01	171.50	158.00	53.50	64.75
10DEC87	14:49	-1.58	-3.01	-4.88	7.17	9.06	13.25	776	-0.01	148.50	135.00	40.00	50.88
10DEC87	14:53	-1.36	-3.14	-5.03	6.83	8.88	3.04	758	-0.01	147.50	144.50	48.25	59.50
10DEC87	14:57	-1.32	-3.05	-5.22	6.48	9.03	-0.04	736	-0.01	146.00	146.00	62.13	74.00
10DEC87	15:01	-1.82	-3.68	-5.80	4.52	6.73	-0.04	748	-0.01	168.00	168.50	66.75	78.00
10DEC87	15:05	-1.86	-3.70	-5.67	6.34	8.75	-0.04	760	-0.01	159.50	159.50	54.25	65.75
10DEC87	15:09	-1.65	-3.24	-5.11	6.33	8.66	-0.04	750	-0.01	147.00	147.00	51.88	63.25
10DEC87	15:13	-1.38	-3.00	-4.72	5.36	7.66	-0.04	744	-0.01	147.50	147.50	53.38	64.50
10DEC87	15:17	-1.45	-2.98	-4.73	5.50	7.94	-0.05	742	-0.01	153.50	153.50	55.00	67.50
10DEC87	15:21	-1.58	-3.27	-5.25	5.39	7.69	-0.04	744	-0.01	154.50	154.50	59.75	71.25

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR OUT GAS P IN H2O	AH IN GAS P IN H2O	AH OUT GAS P IN H2O	EXCESS O2 %	EXCESS O2 %	GAS FLOW KSCFH	STM TRBN IN STM T DEG F	FUEL OIL FLOW GPM	TOT HEAT RELEASE MBTUH	RDF HEAT RELEASE MBTUH	FDR A SPEED %	FDR B SPEED %
10DEC87	15:25	-1.44	-3.20	-4.91	5.84	8.28	-0.04	752	-0.01	146.00	146.00	62.63	74.00
10DEC87	15:29	-1.39	-2.78	-4.75	4.72	6.94	-0.04	760	-0.01	163.00	163.00	62.13	73.75
10DEC87	15:33	-1.87	-3.38	-5.33	5.72	8.16	-0.04	764	-0.01	156.50	156.50	53.63	64.75
10DEC87	15:37	-1.53	-3.07	-4.89	6.75	9.38	-0.04	752	-0.01	144.50	144.50	53.38	64.75
10DEC87	15:41	-1.34	-2.93	-4.72	5.66	8.16	-0.05	740	-0.01	147.00	147.50	60.75	72.25
10DEC87	15:49	-1.59	-3.27	-5.19	4.58	6.95	-0.04	766	-0.01	162.00	162.00	64.00	75.75
*10DEC87	15:57	-1.84	-3.67	-5.55	6.91	9.44	-0.04	760	-0.01	147.50	147.50	45.50	56.75
*10DEC87	16:01	-1.19	-2.67	-4.45	5.97	8.44	-0.04	738	-0.01	139.00	139.00	56.75	67.75
*10DEC87	16:05	-1.59	-3.27	-5.13	4.83	6.97	-0.04	736	-0.01	162.50	162.50	60.25	72.00
*10DEC87	16:09	-2.02	-3.76	-5.72	5.44	7.70	-0.04	754	-0.01	153.50	153.50	55.50	66.75
*10DEC87	16:13	-1.58	-3.27	-5.11	6.34	8.69	-0.04	756	-0.01	151.00	151.00	52.38	63.50
*10DEC87	16:17	-1.35	-3.06	-4.80	6.09	8.44	-0.04	744	-0.01	147.00	147.00	52.75	66.25
*10DEC87	16:21	-1.46	-3.20	-5.19	5.06	7.28	-0.04	746	-0.01	155.50	155.50	56.88	68.25
*10DEC87	16:25	-1.68	-3.04	-4.84	6.38	8.75	-0.04	754	-0.01	157.50	157.50	50.75	62.50
*10DEC87	16:29	-1.26	-2.95	-4.81	6.08	8.41	-0.04	748	-0.01	141.00	141.00	60.38	71.75
10DEC87	16:33	-1.74	-3.29	-5.31	5.67	7.97	-0.04	746	-0.01	157.50	157.50	62.25	73.75
10DEC87	16:37	-1.35	-3.06	-5.00	5.36	7.66	-0.04	750	-0.01	154.50	154.50	65.75	77.50
10DEC87	16:41	-1.62	-3.57	-5.56	4.69	6.98	-0.04	764	-0.01	164.00	164.00	62.50	74.50
10DEC87	16:45	-2.26		-6.00	5.59	8.00	-0.04	766	-0.01	174.00	174.00	51.88	63.25
10DEC87	16:49	-1.59	-3.25	-4.91	6.52	8.97	-0.04	744	-0.01	135.00	135.00	49.50	62.13
10DEC87	16:53	-1.30	-2.86	-4.72	5.23	7.48	-0.04	736	-0.01	144.50	145.00	57.63	70.25
10DEC87	16:57	-1.95	-3.69	-5.58	4.83	7.11	-0.04	742	-0.01	170.50	170.50	53.75	64.75
10DEC87	17:01	-1.70	-3.23	-5.09	5.70	8.13	-0.04	746	-0.01	159.00	159.00	45.88	57.25
10DEC87	17:05	-1.54	-3.09	-4.86	5.50	8.00	-0.04	744	-0.01	150.50	150.50	53.38	64.25
10DEC87	17:09	-1.69	-3.40	-5.31	5.72	8.25	-0.04	748	-0.01	153.00	153.00	52.75	64.25
10DEC87	17:13	-1.31	-3.18	-4.94	6.33	8.97	-0.04	754	-0.01	143.00	143.00	68.00	79.50
10DEC87	17:17	-1.01	-2.70	-4.70	7.22	9.94	-0.03	748	-0.01	139.00	139.00	82.25	94.00
10DEC87	17:21	-1.65	-3.56	-5.84	7.34	9.84	-0.04	740	-0.01	141.50	141.50	91.25	100.75
10DEC87	17:25	-1.20	-3.19	-5.39	4.72	7.09	-0.04	754	-0.01	165.00	165.00	95.25	100.75
10DEC87	17:29	-2.14			6.38	9.16	-0.04	784	-0.01	146.50	146.50	79.75	92.50
10DEC87	17:33	-1.94	-4.02	-6.25	5.00	7.31	-0.04	780	-0.01	163.50	164.00	72.00	83.50
10DEC87	17:37	-1.78	-3.58	-5.73	5.06	7.09	-0.04	776	-0.01	158.00	158.00	62.75	74.75
10DEC87	17:41	-1.78	-3.61	-5.61	6.11	8.56	-0.04	764	-0.01	154.00	154.00	54.00	66.50
10DEC87	17:45	-1.23	-2.63	-4.56	6.58	9.09	-0.04	736	-0.01	133.50	133.50	59.13	71.50
10DEC87	17:49	-1.44	-3.29	-5.16	4.72	6.66	-0.04	738	-0.00	148.50	149.00	66.00	77.25
10DEC87	17:53	-1.59	-3.37	-5.28	5.28	7.39	-0.04	762	-0.01	163.00	163.00	60.63	72.00
10DEC87	17:57	-1.92	-3.42	-5.34	7.72	10.22	-0.04	754	-0.01	145.00	145.00	45.50	57.00
*10DEC87	18:01	-1.68	-3.49	-5.27	8.09	10.41	-0.04	732	-0.01	110.75	110.75	46.75	58.13
	AVERAGE	-1.57	-3.23	-5.16	5.77	8.13	0.43	754	-0.01	152.88	152.51	59.49	70.92

* = NON-TEST PERIOD, NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DST CLTR GAS DF P IN H2O	ABSR IN GAS P IN H2O	ABSR OUT GAS P IN H2O	ABSR GAS DIFF P IN H2O	BGHSE DIFF P IN H2O	ID FAN SUCT P IN H2O	ABSR IN GAS T DEG F	ABSR OUT GAS T DEG F	OUTLET GAS SO2 PPMV	CORRTD GAS SO2 %	OUTLET GAS NOX PPMV	LIME SLRY FEED GPM
		DPI371	PI371	PI372	DPI372	DPI373	PI373	TI3206	TI3228	AI3804	AI3804B	AI3804A	FI3202
*10DEC87	12:38	3.18	-1.76	-13.94	4.67	7.77	-20.75	358	278	0.41	0.05	-0.01	3.11
*10DEC87	12:42	3.07	-5.92	-12.78	4.97	7.39	-20.69	359	287	0.13	0.02	-0.01	3.08
10DEC87	12:46	3.23	-5.02	-13.00	4.66	8.34	-21.38	361	277	-0.90	-0.11	-0.01	3.09
10DEC87	12:50	3.09	-6.36	-13.56	4.53	7.84	-20.56	361	268	-0.59	-0.07	-0.01	3.02
10DEC87	12:54	3.15	-7.31	-12.19	4.72	7.08	-20.00	359	280	-0.51	-0.06	-0.01	2.99
10DEC87	12:58	3.24	-2.29	-12.97	4.52	7.98	-20.69	358	287	3.89	0.46	-0.01	2.99
10DEC87	13:02	3.12	-6.94	-13.88	4.75	8.00	-21.19	360	273	-0.90	-0.11	-0.01	2.98
10DEC87	13:06	3.05	-7.84	-12.84	5.13	7.41	-21.00	362	271	4.86	0.59	-0.01	2.95
10DEC87	13:10	3.21	-2.60	-12.88	4.48	8.06	-20.75	364	286	-0.38	-0.05	-0.01	2.98
10DEC87	13:14	3.09	-7.61	-12.91	4.30	7.61	-20.00	365	283	1.71	0.20	-0.01	3.02
10DEC87	13:18	3.08	-7.72	-11.88	4.31	6.67	-19.19	364	267	-0.90	-0.11	-0.01	3.06
10DEC87	13:22	3.06	-7.48	-11.97	4.25	7.86	-19.75	361	274	1.38	0.17	-0.01	3.06
10DEC87	13:26	3.22	-7.45	-13.41	4.48	8.25	-20.81	360	290	-0.50	-0.06	-0.01	3.07
10DEC87	13:30	2.97	-7.70	-13.50	5.27	7.19	-20.88	362	281	1.84	0.22	-0.01	3.09
10DEC87	13:34	3.23	-7.81	-12.72	4.53	7.92	-20.69	365	266	-0.87	-0.10	-0.01	5.53
10DEC87	13:38	3.11	-8.19	-12.56	4.33	8.03	-20.38	366	279	2.66	0.32	-0.01	6.52
10DEC87	13:42	3.15	-7.55	-12.34	4.45	7.08	-19.75	364	283	-0.77	-0.09	-0.01	6.31
10DEC87	13:46	3.22	-7.67	-12.91	4.45	8.00	-20.50	362	275	1.11	0.13	-0.01	7.31
10DEC87	13:50	3.30		-12.72	4.59	8.06	-21.00	362	272	1.56	0.19	-0.01	7.58
10DEC87	13:54	3.03		-13.06	5.34	7.38	-21.19	362	277	2.28	0.28	-0.01	7.55
10DEC87	13:58	3.27		-13.56	5.00	8.66	-22.06	363	282	-0.75	-0.09	-0.01	7.47
10DEC87	14:02	3.03		-13.38	5.00	8.53	-21.94	366	284	2.53	0.30	-0.01	7.44
10DEC87	14:06	2.88		-12.66	5.25	7.19	-20.88	367	275	-0.74	-0.09	-0.01	7.42
10DEC87	14:10	3.19	-8.03	-12.50	4.33	7.81	-20.31	366	272	2.72	0.33	-0.01	7.36
10DEC87	14:14	3.16	-8.13	-12.41	4.41	8.19	-20.44	365	278	-0.43	-0.05	-0.01	7.38
*10DEC87	14:18	3.16		-12.25	4.94	7.47	-20.75	361	280	1.81	0.21	-0.01	7.33
*10DEC87	14:22	3.24		-13.59	4.94	8.44	-21.81	359	280	0.48	0.06	-0.01	7.31
*10DEC87	14:26	2.86		-13.28	5.27	8.31	-21.94	364	280	0.00	0.00	-0.01	7.28
10DEC87	14:30	3.18		-12.66	4.41	6.95	-19.63	366	276	-0.74	-0.09	-0.01	7.23
10DEC87	14:34	3.15	-8.19	-12.56	4.39	8.09	-20.44	365	276	0.74	0.09	-0.01	7.23
10DEC87	14:38	3.23		-12.75	4.53	8.25	-21.00	364	280	0.28	0.03	-0.01	7.25
10DEC87	14:42	2.99		-14.03	5.30	7.50	-21.19	364	281	1.02	0.12	-0.01	7.25
10DEC87	14:46	2.94		-13.81	5.44	8.31	-22.13	367	278	2.91	0.35	-0.01	7.27
10DEC87	14:50	3.19		-12.88	4.45	8.19	-20.88	369	276	0.30	0.03	-0.01	7.25
10DEC87	14:54	3.27		-14.31	5.27	7.83	-21.50	367	277	2.68	0.32	-0.01	7.28
10DEC87	14:58	2.82		-14.59	6.23	8.84	-23.44	365	281	-0.82	-0.10	-0.01	7.25
10DEC87	15:02	2.66		-14.03	5.97	8.66	-23.00	367	280	4.67	0.57	-0.01	7.27
10DEC87	15:06	3.04		-13.56	4.88	7.39	-20.69	370	276	1.09	0.13	-0.01	7.27
10DEC87	15:10	3.10	-8.16	-12.38	4.33	7.73	-20.06	368	274	1.19	0.14	-0.01	7.30
10DEC87	15:14	3.09	-8.16	-12.50	4.31	7.97	-20.19	366	278	0.62	0.07	-0.01	7.36
10DEC87	15:18	3.16		-13.19	4.44	7.22	-19.81	364	281	-0.90	-0.11	-0.01	7.36

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DST CLTR GAS DF P IN H20	ABSR IN GAS P IN H20	ABSR OUT GAS P IN H20	ABSR GAS DIFF P IN H20	BGHSE DIFF P IN H20	ID FAN SUCT P IN H20	ABSR IN GAS T DEG F	ABSR OUT GAS T DEG F	OUTLET GAS SO2 PPMV	CORRTD GAS SO2 %	OUTLET GAS NOX PPMV	LIME SLRY FEED GPM
10DEC87	15:22	3.16		-12.66	4.44	7.59	-20.19	364	279	1.39	0.17	-0.01	7.41
10DEC87	15:26	3.19	-8.19	-12.69	4.48	8.19	-20.75	364	276	-0.90	-0.11	-0.01	7.48
10DEC87	15:30	3.03		-13.75	5.05	7.84	-21.31	364	278	1.98	0.24	-0.01	7.58
10DEC87	15:34	3.09		-12.81	4.59	7.67	-20.69	366	280	-0.90	-0.11	-0.01	7.66
10DEC87	15:38	3.05	-8.09	-12.44	4.23	7.69	-19.69	364	276	-0.52	-0.06	-0.01	7.69
10DEC87	15:42	3.13		-12.97	4.53	7.48	-20.13	362	275	-0.80	-0.10	-0.01	7.75
10DEC87	15:46	3.16		-12.91	4.31	7.83	-20.94	362	278	0.84	0.10	-0.01	7.78
10DEC87	15:50	3.21		-13.09	4.84	8.50	-21.75	364	281	-0.90	-0.11	-0.01	7.83
#10DEC87	15:54	3.19		-14.09	4.84	7.97	-21.13	367	283	1.59	0.19	-0.01	7.84
#10DEC87	15:58	3.05		-12.16	4.28	7.13	-19.63	367	277	0.00	-0.00	-0.01	7.92
#10DEC87	16:02	3.07	-7.95	-12.25	4.23	7.89	-19.88	364	271	2.63	0.32	-0.01	7.94
#10DEC87	16:06	3.08		-13.38	4.80	7.42	-20.63	362	276	-0.30	-0.04	-0.01	7.91
#10DEC87	16:10	3.16		-12.56	4.45	7.83	-20.44	363	281	-0.63	-0.07	-0.01	7.98
#10DEC87	16:14	3.10	-7.95	-12.25	4.27	7.77	-20.00	363	282	-0.01	-0.00	-0.01	8.00
#10DEC87	16:18	3.13		-13.03	4.45	7.17	-19.81	361	279	2.22	0.27	-0.01	8.03
#10DEC87	16:22	3.17		-12.47	4.53	7.66	-20.69	362	277	-0.34	-0.04	-0.01	8.00
#10DEC87	16:26	3.08	-8.00	-12.28	4.23	7.91	-20.13	363	277	-0.65	-0.08	-0.01	8.06
10DEC87	16:30	3.26		-13.03	4.53	7.41	-20.19	361	276	1.57	0.19	-0.01	8.06
10DEC87	16:34	3.14		-12.72	4.75	7.75	-20.75	362	278	3.97	0.48	-0.01	8.09
10DEC87	16:38	3.37		-13.31	4.77	8.59	-21.75	362	279	-0.29	-0.03	-0.01	8.25
10DEC87	16:42	2.84		-14.69	5.55	8.13	-22.13	365	281	-0.90	-0.11	-0.01	8.25
10DEC87	16:46	2.82		-12.34	4.78	7.56	-20.75	367	281	0.65	0.08	-0.01	8.31
10DEC87	16:50	3.08	-7.94	-12.34	4.31	7.69	-19.88	364	274	3.52	0.43	-0.01	8.34
10DEC87	16:54	3.21		-13.50	4.72	7.64	-20.63	361	273	0.98	0.12	-0.01	8.38
10DEC87	16:58	2.96		-12.69	4.88	7.61	-20.75	362	277	-0.09	-0.01	-0.01	8.28
10DEC87	17:02	3.10	-7.84	-12.38	4.33	8.00	-20.25	362	281	5.55	0.66	-0.01	8.28
10DEC87	17:06	3.14		-13.06	4.53	7.44	-20.19	362	280	1.28	0.16	-0.01	8.19
10DEC87	17:10	3.12		-12.34	4.39	7.44	-19.88	361	278	-0.26	-0.03	-0.01	8.16
10DEC87	17:14	3.22	-8.31	-12.88	4.55	8.28	-21.00	360	277	1.81	0.22	-0.01	8.09
10DEC87	17:18	3.13		-14.56	5.33	8.19	-21.88	359	277	7.00	0.84	-0.01	8.06
10DEC87	17:22	2.77		-14.31	6.48	8.59	-23.50	358	279	1.34	0.17	-0.01	8.03
10DEC87	17:26	2.82		-14.78	6.36	9.06	-23.88	362	282	-0.51	-0.06	-0.01	8.09
10DEC87	17:30	2.30			6.77	8.63	-23.81	366	284	-0.18	-0.02	-0.01	0.00
10DEC87	17:34	2.78		-14.50	6.14	8.31	-22.88	369	281	7.97	0.96	-0.01	8.13
10DEC87	17:38	2.69		-14.47	5.94	8.69	-23.06	373	264	-0.32	-0.04	-0.01	8.16
10DEC87	17:42	2.94		-13.72	4.83	7.83	-21.00	372	274	0.21	0.03	-0.01	7.98
10DEC87	17:46	3.20		-12.31	4.55	7.30	-19.94	368	281	0.69	0.08	-0.01	7.98
10DEC87	17:50	3.28		-13.41	4.70	8.47	-21.50	365	283	7.03	0.85	-0.01	7.97
10DEC87	17:54	2.91		-13.66	4.94	8.22	-21.56	366	282	-0.82	-0.10	-0.01	7.92
10DEC87	17:58	3.04		-11.91	4.44	7.05	-19.50	366	274	-0.66	-0.08	-0.01	7.91
	AVERAGE	3.07	-7.25	-13.11	4.84	7.89	-20.98	364	278	1.06	0.13	-0.01	6.70

= NON-TEST PERIOD, NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DILUTION WATER GPM	ST IN STM PRESS PSIG	DILUTION WATER GPM	BHSE OUT GAS T DEG F	BGHSE DIFF P IN H2O	STACK CO PPMV	STACK OPACITY %	STACK CO2 %	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS
		FI3200	PI200A	FI3200	TI3800	DPI3809	AI370A	AI370B	AI370C	IIL320	IIH320	IIL320	IIL320
*10DEC87	12:38	3.45	-2	3.45	267	7.75	40.50	14.31	2.89	0.01	101.25	0.01	0.01
*10DEC87	12:42	6.00	-6	6.00	271	7.42	42.50	14.91	3.08	0.01	101.50	0.01	0.01
10DEC87	12:46	8.56	-5	8.56	270	8.38	44.38	15.00	3.29	0.01	102.25	0.01	0.01
10DEC87	12:50	5.22	-6	5.22	264	7.83	54.38	14.81	2.38	0.01	100.75	0.01	0.01
10DEC87	12:54	2.81	-7	2.81	266	7.09	48.25	14.72	2.28	0.01	100.25	0.01	0.01
10DEC87	12:58	6.88	-2	6.88	271	8.00	65.50	15.00	2.48	0.01	101.00	0.01	0.01
10DEC87	13:02	8.25	-7	8.25	268	8.00	49.25	13.94	3.08	0.01	102.00	0.01	0.01
10DEC87	13:06	4.41	-8	4.41	264	7.42	42.50	12.91	3.09	0.01	102.00	0.01	0.01
10DEC87	13:10	4.72	-3	4.72	269	8.06	42.38	13.00	3.08	0.01	100.25	0.01	0.01
10DEC87	13:14	8.75	-8	8.75	271	7.61	43.38	17.31	3.08	0.01	99.25	0.01	0.01
10DEC87	13:18	7.22	-8	7.22	265	6.67	39.50	20.25	2.78	0.01	99.25	0.01	0.01
10DEC87	13:22	2.45	-8	2.45	264	7.89	35.50	30.56	2.49	0.01	98.75	0.01	0.01
10DEC87	13:26	4.94	-7	4.94	270	8.25	35.38	35.88	2.78	0.01	100.75	0.01	0.01
10DEC87	13:30	9.50	-8	9.50	271	7.19	47.25	20.19	3.29	0.01	102.75	0.01	0.01
10DEC87	13:34	3.68	-8	3.68	264	7.94	49.25	24.75	3.38	0.01	101.00	0.01	0.01
10DEC87	13:38	2.07	-8	2.07	266	8.06	44.38	21.25	2.89	0.01	99.25	0.01	0.01
10DEC87	13:42	4.67	-8	4.67	269	7.08	39.50	20.19	2.49	0.01	99.75	0.01	0.01
10DEC87	13:46	4.94	-8	4.94	268	8.03	42.50	22.19	2.59	0.01	100.50	0.01	0.01
10DEC87	13:50	2.13		2.13	265	8.09	43.38	32.38	2.69	0.01	101.75	0.01	0.01
10DEC87	13:54	1.69		1.69	266	7.36	46.50	30.19	2.68	0.01	103.00	0.01	0.01
10DEC87	13:58	1.90		1.90	269	8.72	46.38	16.00	3.08	0.01	103.50	0.01	0.01
10DEC87	14:02	4.55		4.55	271	8.59	42.50	17.88	2.88	0.01	103.25	0.01	0.01
10DEC87	14:06	5.09		5.09	269	7.16	46.38	24.81	3.08	0.01	102.50	0.01	0.01
10DEC87	14:10	2.53		2.53	266	7.83	46.50	20.44	3.08	0.01	100.00	0.01	0.01
10DEC87	14:14	1.87		1.87	267	8.22	39.50	26.81	2.59	0.01	100.25	0.01	0.01
*10DEC87	14:18	1.94		1.94	269	7.45	64.25	23.13	2.38	0.01	102.25	0.01	0.01
*10DEC87	14:22	2.48		2.48	269	8.47	56.25	27.00	3.09	0.01	103.50	0.01	0.01
*10DEC87	14:26	4.17		4.17	270	8.31	50.50	28.69	3.29	0.01	103.50	0.01	0.01
10DEC87	14:30	3.98		3.98	268	6.91	48.25	33.13	2.98	0.01	99.75	0.01	0.01
10DEC87	14:34	2.20		2.20	267	8.13	44.38	32.13	2.59	0.01	99.75	0.01	0.01
10DEC87	14:38	2.17		2.17	268	8.31	46.25	30.88	2.78	0.01	101.25	0.01	0.01
10DEC87	14:42	3.75		3.75	269	7.45	40.50	29.31	2.88	0.01	103.25	0.01	0.01
10DEC87	14:46	4.55		4.55	269	8.38	47.25	35.63	3.29	0.01	104.25	0.01	0.01
10DEC87	14:50	3.98		3.98	268	8.22	48.25	36.75	3.09	0.01	100.75	0.01	0.01
10DEC87	14:54	2.52		2.52	267	7.78	63.38	32.63	2.38	0.01	104.25	0.01	0.01
10DEC87	14:58	3.23		3.23	269	8.94	45.38	39.25	2.69	0.01	107.75	0.01	0.01
10DEC87	15:02	4.81		4.81	270	8.72	49.63	43.38	3.18	0.01	106.00	0.01	0.01
10DEC87	15:06	4.86		4.86	269	7.36	43.13	39.75	2.78	0.01	101.50	0.01	0.01
10DEC87	15:10	2.70		2.70	267	7.77	46.00	49.88	2.98	0.01	99.50	0.01	0.01
10DEC87	15:14	1.96		1.96	267	8.00	42.38	49.88	2.78	0.01	99.50	0.01	0.01
10DEC87	15:18	2.36		2.36	269	7.20	38.38	49.88	2.69	0.01	99.75	0.01	0.01

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DILUTION WATER GPM	ST IN STM PRESS PSIG	DILUTION WATER GPM	BHSE OUT GAS T DEG F	BGHSE DIFF P IN H2O	STACK CO PPMV	STACK OPACITY %	STACK CO2 %	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS
10DEC87	15:22	3.77		3.77	269	7.63	46.38	49.88	3.01	0.01	100.00	0.01	0.01
10DEC87	15:26	3.40		3.40	268	8.25	50.25	49.88	2.89	0.01	101.25	0.01	0.01
10DEC87	15:30	2.25		2.25	268	7.81	46.38	49.88	2.89	0.01	102.75	0.01	0.01
10DEC87	15:34	2.54		2.54	269	7.70	48.63	49.88	2.98	0.01	100.75	0.01	0.01
10DEC87	15:38	3.34		3.34	268	7.67	47.13	49.88	2.69	0.01	99.50	0.01	0.01
10DEC87	15:46	1.80		1.80	267	7.56	54.25	49.88	3.18	0.01	101.75	0.01	0.01
10DEC87	15:50	1.86		1.86	269	8.53	53.50	49.88	3.29	0.01	103.00	0.01	0.01
*10DEC87	15:54	2.73		2.73	270	7.89	52.50	49.88	3.18	0.01	102.00	0.01	0.01
*10DEC87	15:58	4.48		4.48	269	7.14	51.50	49.88	2.98	0.01	99.25	0.01	0.01
*10DEC87	16:02	1.93		1.93	265	7.91	52.38	49.88	2.69	0.01	99.25	0.01	0.01
*10DEC87	16:06	0.37		0.37	266	7.34	47.25	49.88	2.99	0.01	101.25	0.01	0.01
*10DEC87	16:10	0.73		0.73	268	7.84	47.38	49.88	2.89	0.01	100.00	0.01	0.01
*10DEC87	16:14	1.90		1.90	270	7.77	46.25	49.88	2.78	0.01	99.25	0.01	0.01
*10DEC87	16:18	2.25		2.25	269	7.13	46.25	49.88	2.78	0.01	99.50	0.01	0.01
*10DEC87	16:22	2.04		2.04	268	7.89	49.25	49.88	3.09	0.01	100.50	0.01	0.01
*10DEC87	16:26	1.93		1.93	266	7.92	47.25	49.88	2.78	0.01	99.25	0.01	0.01
10DEC87	16:30	1.84		1.84	267	7.34	44.63	49.88	2.78	0.01	100.50	0.01	0.01
10DEC87	16:34	1.64		1.64	267	7.78	54.25	-0.02	2.59	0.01	101.25	0.01	0.01
10DEC87	16:38	1.73		1.73	268	8.63	47.38	-0.04	2.78	0.01	102.75	0.01	0.01
10DEC87	16:42	1.94		1.94	269	8.06	47.63	-0.04	3.08	0.01	103.75	0.01	0.01
10DEC87	16:46	2.71		2.71	270	7.58	46.25	45.50	2.59	0.01	100.00	0.01	0.01
10DEC87	16:50	2.54		2.54	268	7.69	53.63	2.88	2.28	0.01	99.00	0.01	0.01
10DEC87	16:54	1.70		1.70	266	7.58	62.50	-0.02	2.59	0.01	101.00	0.01	0.01
10DEC87	16:58	0.20		0.20	267	7.66	54.38	46.25	2.89	0.01	100.50	0.01	0.01
10DEC87	17:02	0.72		0.72	268	8.03	49.25	-0.04	2.78	0.01	99.25	0.01	0.01
10DEC87	17:06	1.72		1.72	269	7.39	44.63	-0.04	2.78	0.01	100.00	0.01	0.01
10DEC87	17:10	1.87		1.87	268	7.44	50.13	-0.04	2.98	0.01	99.25	0.01	0.01
10DEC87	17:14	1.77		1.77	268	8.28	54.13	-0.04	3.08	0.01	101.25	0.01	0.01
10DEC87	17:18	1.51		1.51	267	8.16	48.25	-0.04	2.38	0.01	104.25	0.01	0.01
10DEC87	17:22	1.48		1.48	268	8.66	47.88	-0.04	2.38	0.01	107.75	0.01	0.01
10DEC87	17:26	1.91		1.91	270	9.13	68.00	-0.04	3.08	0.01	107.75	0.01	0.01
10DEC87	17:30	4.16		4.16	272	8.56	95.00	10.97	3.18	0.01	106.75	0.01	0.01
10DEC87	17:34	8.03		8.03	272	8.38	66.25	49.88	3.29	0.01	106.25	0.01	0.01
10DEC87	17:38	4.05		4.05	264	8.72	51.88	37.38	3.38	0.01	105.75	0.01	0.01
10DEC87	17:42	0.77		0.77	264	7.77	47.63	49.88	2.89	0.01	100.75	0.01	0.01
10DEC87	17:46	0.53		0.53	268	7.31	43.88	-0.04	2.59	0.01	99.75	0.01	0.01
10DEC87	17:50	1.84		1.84	270	8.47	54.63	35.13	3.29	0.01	102.00	0.01	0.01
10DEC87	17:54	3.51		3.51	271	8.19	51.25	-0.04	3.18	0.01	102.25	0.01	0.01
10DEC87	17:58	3.77		3.77	268	7.06	53.38	-0.04	2.78	0.01	99.25	0.01	0.01
	AVERAGE	3.39	-7	3.39	268	7.92	48.92	25.14	2.88	0.01	101.71	0.01	0.01

* = NON-TEST PERIOD, NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
12/12/87, 1115-1939
UNIT A

EPA TEST 3

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR STM FLOW KLB/HR	FDWR FLOW KLB/HR	ATTPTR WTR FLOW KLB/HR	TOTAL AIR FLOW KLB/HR	UNDGRT AIR FLOW KLB/HR	OVFR AIR FLOW KLB/HR	SEC AIR FLOW KLB/HR	SPHTR STM P PSIG	MED DRM PRESS PSIG	DSCH HDR PRESS PSIG	BLR FDWR TEMP DEG F	S-SPHTR OUT T DEG F
		FI300	FI341	FI349	FI323	FI323B	FI323A	FI325	PI300	PI341	PI595	TI549	TI349A
*12DEC87	11:15	102.25	113.50	2.70	132.50	84.00	70.25	5.89	656	718	1020	352	758
12DEC87	11:19	107.75	109.50	2.80	132.50	87.00	70.25	5.86	658	730	1048	348	746
12DEC87	11:23	110.00	101.00	3.00	134.50	86.25	70.00	5.89	660	730	1088	354	754
12DEC87	11:27	107.75	108.75	2.91	134.50	94.00	70.00	5.91	660	724	1068	356	750
12DEC87	11:31	105.50	107.25	2.73	133.00	82.00	70.25	5.88	660	728	1036	356	744
12DEC87	11:35	105.50	100.75	2.73	140.50	83.00	70.00	15.63	660	726	1032	354	748
12DEC87	11:39	110.25	106.25	2.80	141.00	82.25	70.75	11.97	662	720	1040	359	764
*12DEC87	11:43	107.00	104.50	2.70	148.50	83.25	71.00	24.00	656	730	1010	338	760
*12DEC87	11:47	99.75	111.50	3.39	143.00	80.75	71.25	11.19	658	712	1120	357	768
*12DEC87	11:51	93.50	94.50	3.10	145.00	80.50	70.00	22.19	654	706	1044	350	758
*12DEC87	11:55	99.50	79.25	3.05	151.00	79.00	71.00	26.94	658	718	1064	354	730
12DEC87	11:59	109.25	95.75	2.91	137.50	75.50	71.25	6.14	662	732	1068	358	732
12DEC87	12:03	108.00	108.75	2.76	141.00	71.50	69.75	16.13	664	732	1044	359	744
12DEC87	12:07	108.75	109.75	2.60	135.50	69.75	70.25	5.72	668	736	1020	361	746
12DEC87	12:11	109.50	103.00	2.63	134.50	69.75	70.00	5.67	664	734	1020	359	752
12DEC87	12:15	107.50	106.50	2.69	134.00	68.50	70.00	5.63	666	734	1032	361	750
12DEC87	12:19	104.75	103.25	2.64	133.50	69.50	70.25	5.69	670	738	1032	362	742
12DEC87	12:23	112.50	96.75	2.53	134.00	71.00	70.25	5.70	668	738	1018	362	744
12DEC87	12:27	106.00	112.50	2.45	134.00	72.75	70.50	5.64	662	724	1004	356	738
12DEC87	12:31	108.25	98.00	2.65	133.50	75.25	70.25	5.67	684	756	1068	364	748
12DEC87	12:35	112.25	100.75	2.40	133.50	77.75	69.75	5.69	708	782	1032	366	760
12DEC87	12:39	117.50	110.25	2.23	133.50	74.00	69.75	5.64	694	762	976	363	760
12DEC87	12:43	98.50	112.75	2.52	133.00	69.00	70.75	5.64	660	720	1008	356	732
12DEC87	12:47	102.25	112.75	2.44	134.00	68.25	71.00	5.67	662	724	1022	358	726
12DEC87	12:51	102.50	113.00	2.46	132.50	68.25	70.75	5.59	662	722	1020	359	726
12DEC87	12:55	109.00	93.50	2.45	133.50	66.50	70.75	5.64	664	736	1040	360	736
12DEC87	12:59	109.75	103.00	2.37	133.50	62.13	70.25	5.63	666	732	1024	360	748
*12DEC87	13:03	108.25	103.75	2.39	133.00	60.25	70.50	5.64	666	736	1036	361	746
*12DEC87	13:07	110.50	98.75	2.37	133.00	65.50	70.25	5.61	680	750	1040	364	752
*12DEC87	13:11	112.25	105.75	2.24	133.50	66.25	70.00	5.63	678	752	1010	362	752
*12DEC87	13:15	104.75	113.00	2.28	133.50	64.50	70.50	5.61	664	724	1006	361	744
*12DEC87	13:19	102.00	106.50	2.32	133.50	66.50	70.75	5.61	660	720	1018	355	738
*12DEC87	13:23	112.25	98.50	2.48	133.00	69.50	70.25	5.61	680	760	1076	364	750
12DEC87	13:27	114.50	108.75	2.29	133.00	69.00	69.75	5.61	708	782	1040	366	770
12DEC87	13:31	108.75	113.50	1.98	133.00	67.75	70.00	5.63	694	756	956	362	758
12DEC87	13:35	102.00	113.00	2.30	133.00	68.25	70.50	5.64	656	716	994	356	736
12DEC87	13:39	109.50	98.25	2.49	133.00	69.50	70.50	5.59	664	734	1060	360	736
12DEC87	13:43	110.50	99.25	2.33	134.00	68.00	70.50	5.58	688	758	1040	363	754
12DEC87	13:47	112.50	105.50	2.25	134.50	65.50	70.25	5.63	682	750	1008	362	762
12DEC87	13:51	100.50	113.25	2.30	133.00	65.75	70.75	5.67	656	712	998	355	740
12DEC87	13:55	105.50	97.00	2.48	133.00	69.50	70.75	5.63	660	728	1056	358	736

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR STM FLOW KLB/HR	FDWR FLOW KLB/HR	ATTPTR WTR FLOW KLB/HR	TOTAL AIR FLOW KLB/HR	UNDGRT AIR FLOW KLB/HR	OVFR AIR FLOW KLB/HR	SEC AIR FLOW KLB/HR	SPHTR STM P PSIG	MED DRM PRESS PSIG	DSCH HDR PRESS PSIG	BLR FDWR TEMP DEG F	S-SPHTR OUT T DEG F
12DEC87	13:59	109.75	96.25	2.41	133.50	71.50	70.50	5.64	680	748	1060	364	752
12DEC87	14:03	106.25	110.00	2.20	133.00	73.50	70.50	5.56	664	730	1002	360	748
12DEC87	14:07	101.50	111.50	2.23	133.50	77.25	70.75	5.64	656	716	1000	356	740
12DEC87	14:11	112.25	96.75	2.43	133.50	82.50	70.25	5.64	666	738	1056	362	748
12DEC87	14:15	104.75	104.00	2.39	133.00	85.50	70.50	5.63	670	738	1044	362	750
12DEC87	14:19	109.75	101.75	2.21	134.50	86.75	70.50	5.67	672	736	1012	362	752
12DEC87	14:23	107.50	111.00	2.19	133.00	88.50	70.50	5.58	660	734	996	356	740
12DEC87	14:27	112.00	104.50	2.34	132.00	89.25	69.75	5.56	686	762	1044	363	760
12DEC87	14:31	113.75	105.50	2.27	132.50	88.00	69.50	5.55	700	774	1022	365	772
12DEC87	14:35	112.00	112.25	2.24	132.00	86.75	69.25	5.63	692	764	986	363	772
12DEC87	14:39	107.50	110.50	2.49	133.00	83.50	69.50	5.59	680	742	1006	363	766
12DEC87	14:43	108.00	101.50	2.63	133.00	81.25	70.00	5.56	680	744	1028	364	756
*12DEC87	14:47	104.25	106.25	2.60	133.50	79.25	70.25	5.66	658	722	1006	357	740
*12DEC87	14:51	112.50	99.50	2.74	133.00	77.50	70.00	5.56	668	742	1052	363	748
*12DEC87	14:55	112.50	104.00	2.63	133.00	76.25	69.75	5.63	696	770	1044	365	760
*12DEC87	14:59	111.75	110.75	2.38	134.00	74.75	69.75	5.63	704	770	996	365	762
*12DEC87	15:03	104.50	112.50	2.48	133.50	72.75	70.50	5.59	656	716	976	357	736
*12DEC87	15:07	108.50	95.75	2.73	133.00	73.25	70.75	5.63	660	730	1052	359	726
12DEC87	15:11	109.25	104.50	2.59	133.50	71.00	70.50	5.61	672	740	1048	363	740
12DEC87	15:15	107.25	109.00	2.40	133.50	70.00	70.50	5.63	658	722	1006	357	738
12DEC87	15:19	105.25	101.25	2.46	133.00	71.50	70.50	5.61	660	726	1032	357	736
12DEC87	15:23	111.00	103.75	2.44	140.50	74.00	69.25	17.13	684	754	1048	364	754
*12DEC87	15:27	0.05	135.50	0.00	139.50	100.00	50.25	29.88	672	670	824	295	750
*12DEC87	15:31	3.29	0.00	0.00	135.50	0.98	53.00	23.25	616	612	1188	276	716
*12DEC87	15:35	4.97	38.50	0.00	111.75	100.00	52.88	19.69	578	578	1184	277	682
*12DEC87	15:39	6.03	36.13	0.00	97.00	100.00	51.88	10.81	554	554	1200	266	662
*12DEC87	15:43	0.54	36.88	0.00	108.50	100.00	51.88	27.06	534	530	1204	268	652
*12DEC87	15:47	22.94	0.00	0.00	122.75	0.98	64.75	28.56	472	468	1172	268	622
*12DEC87	15:51	13.31	23.44	0.00	105.50	0.98	54.25	17.44	421	420	1136	268	588
*12DEC87	15:55	15.50	33.75	0.00	99.00	100.00	53.88	12.00	382	382	1176	271	572
*12DEC87	15:59	11.75	20.38	0.00	101.75	1.00	53.63	15.44	362	363	1176	271	566
*12DEC87	16:03	10.84	16.31	0.00	109.50	1.00	53.13	23.19	359	363	1176	271	570
*12DEC87	16:07	11.09	2.55	0.00	108.75	100.00	40.13	32.25	380	386	1176	272	588
*12DEC87	16:11	12.09	0.00	0.00	109.75	100.00	39.38	33.38	417	424	1180	272	620
*12DEC87	16:15	14.13	0.00	0.00	129.00	0.98	50.63	33.00	454	461	1184	273	656
*12DEC87	16:19	13.78	0.00	0.19	132.50	0.98	50.75	33.88	506	518	1204	272	690
*12DEC87	16:23	14.47	0.00	1.38	132.50	0.98	49.88	33.38	602	620	1216	274	740
*12DEC87	16:27	6.06	0.00	1.17	124.75	0.98	49.00	21.50	706	712	1216	275	796
*12DEC87	16:31	18.50	1.63	1.48	109.25	0.98	56.25	10.53	714	718	1208	278	820
*12DEC87	16:35	40.00	0.00	3.81	117.75	0.98	58.75	10.53	676	680	1176	283	822
*12DEC87	16:39	32.50	47.00	4.30	117.50	0.98	59.38	10.66	622	630	1160	299	766
*12DEC87	16:43	0.00	0.00	4.06	105.25	0.98	50.38	6.58	616	618	1156	277	724

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR STM FLOW KLB/HR	FDWR FLOW KLB/HR	ATTPTR WTR FLOW KLB/HR	TOTAL AIR FLOW KLB/HR	UNDGRT AIR FLOW KLB/HR	OVFR AIR FLOW KLB/HR	SEC AIR FLOW KLB/HR	SPHTR STM P PSIG	MED DRM PRESS PSIG	DSCH HDR PRESS PSIG	BLR FDWR TEMP DEG F	S-SPHTR OUT T DEG F
*12DEC87	16:47	10.25	0.00	3.66	106.00	0.98	60.50	6.34	630	638	1176	271	692
*12DEC87	16:51	24.69	0.00	3.14	136.00	100.00	62.50	28.50	634	648	1172	300	626
*12DEC87	16:55	55.00	0.00	1.17	120.75	100.00	66.00	6.20	640	662	1168	309	568
*12DEC87	16:59	63.75	48.63	1.03	124.25	100.00	64.25	5.64	640	670	1116	317	582
*12DEC87	17:03	76.00	72.75	1.08	125.25	0.98	63.63	5.73	648	688	1152	329	672
*12DEC87	17:07	87.00	82.50	0.97	133.00	1.00	71.75	5.36	654	702	1112	339	728
*12DEC87	17:11	101.75	83.00	4.30	132.50	1.00	71.50	5.39	664	730	1096	348	746
*12DEC87	17:15	120.25	91.25	4.05	132.50	87.25	70.00	5.39	694	778	1096	363	756
*12DEC87	17:19	113.25	113.25	3.63	133.00	89.25	69.50	5.47	708	774	1024	361	762
*12DEC87	17:23	112.00	113.50	3.32	132.50	88.00	69.75	5.45	696	764	982	363	746
*12DEC87	17:27	97.00	113.50	3.47	134.50	86.50	70.50	5.38	662	712	984	353	724
*12DEC87	17:31	102.00	106.00	3.53	135.50	86.50	70.75	5.39	664	724	1036	351	716
*12DEC87	17:35	107.50	86.50	3.63	136.00	86.25	70.50	5.38	670	738	1088	359	726
*12DEC87	17:39	112.25	96.00	3.24	135.50	88.75	70.00	5.38	680	754	1048	361	736
*12DEC87	17:43	115.25	105.75	2.94	136.00	90.50	69.50	5.41	694	770	1006	363	754
*12DEC87	17:47	109.50	113.00	2.93	135.50	91.75	70.00	5.31	680	740	992	362	746
*12DEC87	17:51	102.25	113.00	2.95	136.00	92.25	70.50	5.39	664	724	998	353	728
*12DEC87	17:55	109.25	91.75	3.20	136.00	93.00	70.25	5.41	674	744	1076	361	734
*12DEC87	17:59	89.25	114.00	2.89	136.50	93.75	63.50	5.48	662	698	1008	357	736
*12DEC87	18:03	105.50	83.75	2.90	135.00	95.50	70.25	5.31	670	738	1044	359	738
*12DEC87	18:07	114.50	105.00	2.73	135.00	96.25	69.75	5.41	676	748	1016	361	754
*12DEC87	18:11	106.50	112.75	2.77	131.00	96.50	69.75	5.59	670	736	1014	358	752
12DEC87	18:15	110.25	105.50	2.84	129.50	95.50	70.00	5.52	672	742	1032	360	748
12DEC87	18:19	107.75	109.25	2.82	130.50	93.50	69.75	5.48	678	744	1024	363	756
12DEC87	18:23	98.50	82.25	3.03	129.50	92.25	70.00	5.44	668	728	1052	360	746
12DEC87	18:27	108.25	103.50	2.76	128.50	91.00	69.50	5.36	672	738	1012	360	750
12DEC87	18:31	105.75	100.25	2.88	138.50	91.50	69.25	16.13	670	742	1036	358	744
12DEC87	18:35	108.25	111.50	2.79	150.50	88.00	62.63	27.25	678	728	1008	363	766
*12DEC87	18:39	85.75	103.75	3.28	147.50	84.50	63.25	26.94	574	618	1004	345	740
*12DEC87	18:43	51.75	97.75	2.95	143.00	85.50	50.50	27.63	572	588	1052	319	728
*12DEC87	18:47	40.00	52.13	3.43	137.00	87.25	58.88	26.44	560	570	1148	286	718
*12DEC87	18:51	44.63	33.88	1.46	143.00	77.00	60.50	27.19	520	532	1172	285	692
*12DEC87	18:55	26.56	69.00	1.55	140.50	75.00	50.50	31.25	494	501	1156	275	662
*12DEC87	18:59	31.50	29.13	1.58	142.50	96.25	50.25	36.88	490	499	1168	273	662
*12DEC87	19:03	25.06	35.50	1.55	142.50	100.00	50.00	37.00	504	514	1168	276	674
*12DEC87	19:07	19.69	22.75	1.49	142.50	100.00	50.00	37.38	540	550	1172	278	692
*12DEC87	19:11	18.94	1.78	3.47	143.50	100.00	49.75	39.63	586	596	1180	280	710
*12DEC87	19:15	20.81	2.17	3.34	144.50	100.00	49.38	40.13	634	646	1196	279	728
*12DEC87	19:19	22.38	4.53	3.09	144.50	100.00	48.88	39.88	684	694	1176	281	730
*12DEC87	19:23	36.00	26.19	3.03	136.00	100.00	49.38	32.00	682	690	1164	288	700
*12DEC87	19:27	38.75	34.63	3.12	114.25	100.00	48.38	30.44	656	664	1164	293	664
*12DEC87	19:31	39.75	54.38	3.16	115.25	100.00	48.88	31.25	632	640	1152	291	650

RADIAN CORPORATION

01-Jan-88

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR STM FLOW KLB/HR	FDWR FLOW KLB/HR	ATTPTR WTR FLOW KLB/HR	TOTAL AIR FLOW KLB/HR	UNDGRT AIR FLOW KLB/HR	OVFR AIR FLOW KLB/HR	SEC AIR FLOW KLB/HR	SPHTR STM P PSIG	MED DRM PRESS PSIG	DSCH HDR PRESS PSIG	BLR FDWR TEMP DEG F	S-SPHTR OUT T DEG F
#12DEC87	19:35	35.00	49.50	1.27	114.75	100.00	49.38	30.94	616	624	1148	282	644
#12DEC87	19:39	30.81	44.38	1.34	114.50	100.00	49.63	30.88	598	606	1168	276	644
	AVERAGE	107.95	104.97	2.52	134.18	77.11	70.06	7.00	671	738	1028	360	748

= NON-TEST PERIOD, NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SAT TEMP DEG F	BLR FDWR TEMP DEG F	S-SPHTR IN TEMP DEG F	ECON OUT FDWTR T DEG F	FCE PRESS PSIG	FCE PRESS PSIG	FCE PRESS PSIG	UNDGRT AIR PRESS IN H2O	WNDBOX PRESS IN H2O	AH AIR OUT P IN H2O	OVFR AIR FAN P IN H2O	AH AIR DIFF P IN H2O
		TI349C	TI549	TI349B	TI347	PI322A	PI322B	PI322C	PI366	PI365	PI318	PIC316	DPI318
*12DEC87	11:16	500	351	608	470				-0.10	-0.92	6.03	25.00	0.78
12DEC87	11:20	502	352	618	466				-0.28	-1.15	5.80	24.75	0.78
12DEC87	11:24	502	355	616	470				-0.10	-0.94	6.08	25.00	0.80
12DEC87	11:28	501	355	610	466				0.00	-0.84	6.16	25.13	0.80
12DEC87	11:32	502	356	614	465				-0.30	-1.14	5.92	24.88	0.79
12DEC87	11:36	502	355	616	469				0.01	-0.08	5.80	24.94	0.84
12DEC87	11:40	499	353	612	472				-0.13	0.90	5.61	26.19	0.85
*12DEC87	11:44	502	353	616	474				-0.22	-0.05	6.17	25.19	0.91
*12DEC87	11:48	500	355	602	466				-0.25	-0.99	6.27	25.19	0.86
*12DEC87	11:52	499	350	594	468				-0.13	0.78	5.28	24.69	0.89
*12DEC87	11:56	501	355	604	483				-0.16	-0.49	6.72	25.75	0.90
12DEC87	12:00	503	358	618	486				-0.23	-1.00	6.34	25.13	0.82
12DEC87	12:04	503	360	616	476				-0.09	-0.28	5.81	24.88	0.86
12DEC87	12:08	503	361	622	472				-0.46	-1.25	6.05	24.81	0.81
12DEC87	12:12	503	359	620	475				-0.23	-0.97	6.06	24.88	0.80
12DEC87	12:16	503	362	616	473				-0.42	-1.17	5.98	24.81	0.80
12DEC87	12:20	504	363	614	470				-0.47	-1.23	5.91	24.81	0.79
12DEC87	12:24	503	361	620	476				-0.21	-0.98	6.08	25.00	0.78
12DEC87	12:28	502	356	610	469				-0.02	-0.80	6.00	25.00	0.79
12DEC87	12:32	507	365	624	471				-0.41	-1.22	5.94	24.81	0.79
12DEC87	12:36	510	365	638	476				-0.20	-0.97	6.06	24.88	0.80
12DEC87	12:40	506	362	624	476				-0.39	-1.14	5.98	24.81	0.79
12DEC87	12:44	502	357	594	462				-0.25	-1.00	5.97	25.00	0.78
12DEC87	12:48	502	359	610	459				-0.23	-0.98	6.02	25.06	0.80
12DEC87	12:52	502	358	606	459				-0.44	-1.20	5.84	24.88	0.78
12DEC87	12:56	503	361	620	468				-0.19	-0.96	6.06	25.06	0.79
12DEC87	13:00	502	359	620	473				-0.11	-0.85	6.06	25.00	0.78
*12DEC87	13:04	504	362	620	471				-0.35	-1.13	5.94	24.88	0.79
*12DEC87	13:08	505	363	626	471				-0.24	-1.02	6.00	24.88	0.79
*12DEC87	13:12	505	363	624	475				-0.22	-0.99	6.03	24.88	0.79
*12DEC87	13:16	502	359	610	465				-0.12	-0.86	6.06	25.06	0.79
*12DEC87	13:20	501	356	614	464				-0.24	-0.99	5.97	25.00	0.79
*12DEC87	13:24	508	365	634	478				-0.15	-0.88	6.05	25.00	0.79
12DEC87	13:28	510	365	638	478				-0.42	-1.17	5.94	24.69	0.78
12DEC87	13:32	505	361	624	469				-0.43	-1.18	5.94	24.81	0.79
12DEC87	13:36	500	355	600	460				-0.18	-0.91	6.02	25.06	0.78
12DEC87	13:40	503	362	618	466				-0.24	-1.01	5.91	24.94	0.78
12DEC87	13:44	507	363	634	474				-0.27	-1.07	5.97	24.88	0.80
12DEC87	13:48	504	361	626	476				-0.21	-0.98	6.13	25.00	0.80
12DEC87	13:52	500	354	602	463				-0.27	-1.03	5.98	25.00	0.78
12DEC87	13:56	502	361	616	467				-0.26	-1.02	5.97	25.00	0.79

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SAT TEMP DEG F	BLR FDWR TEMP DEG F	S-SPHTR IN TEMP DEG F	ECON OUT FDWTR T DEG F	FCE PRESS PSIG	FCE PRESS PSIG	FCE PRESS PSIG	UNDGRT AIR PRESS IN H2O	WNDBOX PRESS IN H2O	AH AIR OUT P IN H2O	OVFR AIR FAN P IN H2O	AH AIR DIFF P IN H2O
12DEC87	14:00	505	363	628	473				-0.29	-1.03	5.97	24.94	0.79
12DEC87	14:04	503	361	618	473				-0.32	-1.06	5.97	24.94	0.79
12DEC87	14:08	501	354	610	465				-0.11	-0.81	6.09	25.19	0.79
12DEC87	14:12	503	362	626	473				-0.22	-0.94	6.02	25.00	0.79
12DEC87	14:16	505	363	622	470				-0.36	-1.08	5.95	24.88	0.78
12DEC87	14:20	502	361	624	473				-0.44	-1.16	6.02	24.94	0.80
12DEC87	14:24	503	360	618	472				-0.04	-0.76	6.05	25.06	0.77
12DEC87	14:28	507	365	640	473				-0.31	-1.04	5.95	24.81	0.78
12DEC87	14:32	508	364	640	476				-0.28	-1.05	5.98	24.75	0.79
12DEC87	14:36	507	363	634	475				-0.27	-1.02	5.94	24.69	0.78
12DEC87	14:40	504	363	622	472				-0.23	-0.95	6.03	24.88	0.79
12DEC87	14:44	504	363	620	473				-0.59	-1.30	5.86	24.69	0.79
*12DEC87	14:48	502	357	610	474				-0.16	-0.88	6.05	25.00	0.78
*12DEC87	14:52	504	363	622	479				-0.26	-0.98	6.00	24.38	0.79
*12DEC87	14:56	509	366	634	476				-0.39	-1.13	5.94	24.75	0.78
*12DEC87	15:00	507	364	628	474				-0.32	-1.05	6.05	24.88	0.80
*12DEC87	15:04	500	354	598	464				-0.26	-0.98	5.98	25.06	0.78
*12DEC87	15:08	503	361	610	470				-0.32	-1.08	5.97	25.00	0.79
12DEC87	15:12	503	362	620	470				-0.29	-1.02	6.00	25.00	0.79
12DEC87	15:16	501	355	612	468				-0.28	-0.98	6.00	25.06	0.79
12DEC87	15:20	502	359	614	469				-0.19	-0.92	6.05	25.06	0.79
12DEC87	15:24	504	363	628	472				-0.25	1.67	5.02	25.38	0.87
*12DEC87	15:28	496	287	636	417				-0.40	0.78	6.08	32.25	0.82
*12DEC87	15:32	486	276	632	421				-0.51	-1.38	7.22	28.63	0.73
*12DEC87	15:36	480	268	610	427				-0.63	0.04	7.64	27.88	0.63
*12DEC87	15:40	476	267	590	424				-0.56	-0.78	6.09	27.94	0.48
*12DEC87	15:44	471	268	572	405				-0.49	0.97	5.61	28.19	0.58
*12DEC87	15:48	455	268	534	411				-0.67	-1.01	7.19	27.88	0.61
*12DEC87	15:52	445	269	503	413				-0.70	-0.52	6.23	28.13	0.52
*12DEC87	15:56	436	271	486	414				-0.59	-0.73	6.00	28.00	0.49
*12DEC87	16:00	432	271	482	417				-0.60	0.04	5.86	27.94	0.51
*12DEC87	16:04	433	271	489	438				-0.66	1.13	5.75	27.81	0.58
*12DEC87	16:08	439	272	510	445				-0.60	2.18	6.03	3.48	0.55
*12DEC87	16:12	449	272	544	454				-0.71	2.15	6.02	3.28	0.56
*12DEC87	16:16	458	273	584	463				-0.48	2.23	5.56	28.06	0.74
*12DEC87	16:20	472	274	546	476				-0.46	2.24	5.98	27.88	0.76
*12DEC87	16:24	491	274	486	496				-0.45	2.22	6.02	27.94	0.76
*12DEC87	16:28	505	276	538	509				-0.55	-0.71	6.80	28.00	0.66
*12DEC87	16:32	505	279	520	508				-0.42	-0.83	5.52	25.75	0.61
*12DEC87	16:36	496	287	505	500				-0.47	-0.93	5.92	27.81	0.64
*12DEC87	16:40	489	291	486	494				-0.60		6.23	30.50	0.62
*12DEC87	16:44	488	276	484	491				-0.47	-0.96	6.02	28.00	0.53

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SAT TEMP DEG F	BLR FDWR TEMP DEG F	S-SPHTR IN TEMP DEG F	ECON OUT FDWTR T DEG F	FCE PRESS PSIG	FCE PRESS PSIG	FCE PRESS PSIG	UNDGRT AIR PRESS IN H2O	WNDBOX PRESS IN H2O	AH AIR OUT P IN H2O	OVFR AIR FAN P IN H2O	AH AIR DIFF P IN H2O
*12DEC87	16:48	491	285	488	495				-0.42	-0.10	4.77	25.75	0.59
*12DEC87	16:52	492	299	489	496				-0.31	0.92	5.77	28.06	0.79
*12DEC87	16:56	494	318	536	499				-0.42	-0.97	6.13	27.06	0.66
*12DEC87	17:00	495	313	596	498				-0.19	-0.87	5.81	27.56	0.70
*12DEC87	17:04	498	331	616	494				-0.22	-0.90	5.98	27.69	0.71
*12DEC87	17:08	499	339	626	480				-0.07	-0.73	5.94	25.31	0.78
*12DEC87	17:12	504	355	586	465				0.00	-0.75	6.03	25.19	0.78
*12DEC87	17:16	509	362	626	480				-0.39	-1.14	5.88	24.69	0.77
*12DEC87	17:20	509	361	612	475				-0.30	-1.05	6.03	24.81	0.79
*12DEC87	17:24	506	362	608	466				-0.48	-1.26	5.92	24.75	0.78
*12DEC87	17:28	501	350	580	459				-0.14	-0.94	6.00	25.13	0.79
*12DEC87	17:32	502	354	590	462				0.05	-0.78	6.03	25.25	0.80
*12DEC87	17:36	504	362	602	471				-0.25	-1.10	5.92	25.00	0.80
*12DEC87	17:40	506	361	616	482				-0.20	-1.06	5.97	24.88	0.80
*12DEC87	17:44	508	363	624	482				-0.14	-0.96	6.02	24.88	0.80
*12DEC87	17:48	503	360	604	468				-0.23	-1.04	5.98	24.88	0.80
*12DEC87	17:52	502	352	596	464				-0.29	-1.08	5.95	24.94	0.80
*12DEC87	17:56	505	363	610	473				-0.28	-1.06	5.95	24.88	0.81
*12DEC87	18:00	499	346	598	453				-0.04	-0.88	6.64	28.63	0.79
*12DEC87	18:04	504	361	620	477				-0.23	-1.00	5.97	25.00	0.80
*12DEC87	18:08	504	360	626	473				-0.19	-0.97	6.03	24.94	0.79
*12DEC87	18:12	504	359	610	470				-0.34	-1.06	6.05	24.94	0.76
12DEC87	18:16	504	360	618	469				-0.33	-1.06	5.95	24.81	0.76
12DEC87	18:20	504	363	620	471				-0.40	-1.18	6.00	24.81	0.76
12DEC87	18:24	503	361	606	473				-0.05	-0.79	6.08	25.06	0.76
12DEC87	18:28	504	360	622	481				-0.11	-0.91	5.91	24.75	0.74
12DEC87	18:32	505	362	618	482				-0.32	0.10	5.50	24.44	0.83
*12DEC87	18:36	499	360	620	477				-1.12	0.53	5.91	27.63	0.91
*12DEC87	18:40	484	341	552	466				-0.87	0.75	6.19	29.25	0.90
*12DEC87	18:44	480	312	483	453				-0.96	0.60	6.61	32.38	0.84
*12DEC87	18:48	477	286	475	455				-0.86	0.66	5.48	26.44	0.82
*12DEC87	18:52	470	284	548	466				-0.56	1.03	5.97	28.06	0.86
*12DEC87	18:56	466	271	463	464				-0.68	1.90	6.02	28.88	0.84
*12DEC87	19:00	466	274	462	469				-0.53	2.38	5.94	28.00	0.85
*12DEC87	19:04	470	277	465	472				-0.48	2.43	5.97	27.94	0.85
*12DEC87	19:08	476	278	472	480				-0.21	2.81	5.97	28.00	0.84
*12DEC87	19:12	485	279	481	489				-0.25	2.90	5.94	27.94	0.86
*12DEC87	19:16	494	279	489	498				-0.40	2.80	5.94	27.38	0.85
*12DEC87	19:20	502	282	497	505				-0.22	2.78	6.23	28.06	0.86
*12DEC87	19:24	500	289	496	503				-0.94	1.99	7.59	28.25	0.71
*12DEC87	19:28	495	292	492	499				-0.72	1.82	6.00	27.94	0.60
*12DEC87	19:32	491	290	488	495				-0.70	1.92	6.03	28.06	0.61

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SAT TEMP DEG F	BLR FDWR TEMP DEG F	S-SPHTR IN TEMP DEG F	ECON OUT FDWTR T DEG F	FCE PRESS PSIG	FCE PRESS PSIG	FCE PRESS PSIG	UNDGRT AIR PRESS IN H2O	WNDBOX PRESS IN H2O	AH AIR OUT P IN H2O	OVFR AIR FAN P IN H2O	AH AIR DIFF P IN H2O
*12DEC87	19:36	488	281	509	492				-0.67	1.91	6.00	28.00	0.60
	AVERAGE	504	360	619	471				-0.26	-0.68	5.95	24.95	0.79

* = NON-TEST PERIOD, VALUE NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	ECON IN GAS T DEG F	ECON OUT GAS T DEG F	AH OUT GAS T DEG F	AIR HTR IN AIR T DEG F	GEN PWR KW	AH OUT AIR T DEG F	SHTR FLUE GAS DIF P IN H2O	SHTR GAS DIFF P IN H2O	ECON GAS DIFF P IN H2O	AH GAS DIFF P IN H2O	WNDBX-FCE DF P IN H2O	UNDGRT-FCE DF P IN H2O
		TI346	TI348	TI327A	TI327B	JI701A	TI329	DPI368	DPI368	DPI369	DPI370	DPI365A	DPI366A
*12DEC87	11:12	806	536	388	115	21696	390	0.35	0.35	1.75	1.99	-0.31	0.51
*12DEC87	11:16	782	522	381	116	18944	385	0.37	0.37	1.72	1.99	-0.30	0.53
12DEC87	11:20	816	532	384	116	19456	385	0.42	0.42	1.88	2.13	-0.32	0.54
12DEC87	11:24	814	532	384	118	20928	385	0.40	0.40	1.77	2.01	-0.30	0.54
12DEC87	11:28	796	526	380	118	20800	384	0.35	0.35	1.72	1.95	-0.31	0.54
12DEC87	11:32	800	528	381	119	20480	383	0.39	0.39	1.80	2.05	-0.31	0.52
12DEC87	11:36	810	534	382	120	20736	382	0.42	0.42	1.84	2.09	0.41	0.50
12DEC87	11:40	772	522	381	117	18240	384	0.38	0.38	1.79	2.10	1.46	0.45
*12DEC87	11:44	840	540	383	117	19840	379	0.47	0.47	2.03	2.28	0.68	0.51
*12DEC87	11:48	800	528	380	119	20160	382	0.42	0.42	1.81	2.13	-0.22	0.52
*12DEC87	11:52	770	524	377	118	18880	378	0.40	0.40	1.86	2.16	1.27	0.37
*12DEC87	11:56	800	540	379	119	20672	374	0.42	0.42	2.05	2.30	0.23	0.55
12DEC87	12:00	804	538	386	119	21440	385	0.43	0.43	1.84	2.13	-0.30	0.47
12DEC87	12:04	796	536	386	118	21952	386	0.42	0.42	1.87	2.14	0.22	0.41
12DEC87	12:08	812	538	389	116	22080	389	0.43	0.43	1.93	2.22	-0.32	0.47
12DEC87	12:12	806	536	388	115	21568	390	0.41	0.41	1.79	2.05	-0.31	0.43
12DEC87	12:16	792	530	384	115	22016	387	0.38	0.38	1.75	2.05	-0.31	0.43
12DEC87	12:20	804	536	383	116	22464	385	0.40	0.40	1.84	2.10	-0.32	0.44
12DEC87	12:24	794	532	383	115	21376	385	0.37	0.37	1.73	1.98	-0.31	0.46
12DEC87	12:28	794	528	380	117	20928	383	0.37	0.37	1.73	1.96	-0.30	0.47
12DEC87	12:32	816	538	384	117	23360	385	0.39	0.39	1.83	2.09	-0.33	0.48
12DEC87	12:36	814	540	387	117	23616	388	0.39	0.39	1.74	1.99	-0.31	0.45
12DEC87	12:40	784	540	384	116	22272	389	0.34	0.34	1.67	1.95	-0.31	0.44
12DEC87	12:44	814	524	377	118	21120	380	0.34	0.34	1.73	1.96	-0.31	0.44
12DEC87	12:48	796	526	378	120	21376	379	0.40	0.40	1.70	1.96	-0.31	0.44
12DEC87	12:52	792	526	377	120	21376	379	0.36	0.36	1.79	2.02	-0.31	0.45
12DEC87	12:56	810	532	381	120	21952	382	0.40	0.40	1.74	1.99	-0.31	0.46
12DEC87	13:00	792	528	381	120	21376	385	0.33	0.33	1.71	1.93	-0.30	0.44
*12DEC87	13:04	802	532	382	119	22336	384	0.37	0.37	1.79	2.03	-0.31	0.47
*12DEC87	13:08	806	534	385	119	22528	386	0.38	0.38	1.75	2.01	-0.31	0.47
*12DEC87	13:12	800	532	384	119	22464	387	0.36	0.36	1.70	1.94	-0.31	0.46
*12DEC87	13:16	788	524	379	118	20992	383	0.32	0.32	1.70	1.91	-0.30	0.44
*12DEC87	13:20	792	526	379	119	20928	381	0.38	0.38	1.73	1.96	-0.31	0.44
*12DEC87	13:24	826	540	385	119	23424	386	0.38	0.38	1.77	1.96	-0.32	0.42
12DEC87	13:28	808	538	388	118	24064	391	0.37	0.37	1.78	2.03	-0.32	0.43
12DEC87	13:32	786	526	382	117	22272	386	0.38	0.38	1.71	2.01	-0.31	0.44
12DEC87	13:36	786	522	376	118	20416	380	0.34	0.34	1.68	1.91	-0.30	0.44
12DEC87	13:40	808	530	380	120	21888	381	0.36	0.36	1.77	1.99	-0.31	0.45
12DEC87	13:44	820	538	386	119	22848	386	0.42	0.42	1.82	2.08	-0.31	0.48
12DEC87	13:48	786	528	384	116	22336	388	0.36	0.36	1.71	1.98	-0.30	0.46
12DEC87	13:52	780	522	378	119	20160	383	0.34	0.34	1.71	1.96	-0.31	0.45

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	ECON IN GAS T DEG F	ECON OUT GAS T DEG F	AH OUT GAS T DEG F	AIR HTR IN AIR T DEG F	GEN PWR KW	AH OUT AIR T DEG F	SHTR FLUE GAS DIF P IN H20	SHTR GAS DIFF P IN H20	ECON GAS DIFF P IN H20	AH GAS DIFF P IN H20	WNDBX-FCE DF P IN H20	UNDGRT-FCE DF P IN H20
12DEC87	13:56	808	530	380	120	22080	382	0.40	0.40	1.78	1.98	-0.32	0.44
12DEC87	14:00	800	532	382	119	22592	385	0.36	0.36	1.73	1.95	-0.31	0.43
12DEC87	14:04	804	532	382	120	22016	384	0.35	0.35	1.79	1.98	-0.32	0.42
12DEC87	14:08	798	526	379	120	20480	381	0.39	0.39	1.75	1.96	-0.31	0.39
12DEC87	14:12	792	528	383	118	22080	386	0.35	0.35	1.72	1.96	-0.30	0.41
12DEC87	14:16	810	534	384	120	22784	385	0.36	0.36	1.80	2.00	-0.32	0.40
12DEC87	14:20	784	528	382	116	20736	385	0.40	0.40	1.70	2.00	-0.30	0.42
12DEC87	14:24	820	536	383	117	22080	385	0.37	0.37	1.80	1.98	-0.31	0.40
12DEC87	14:28	820	538	388	117	23360	390	0.36	0.36	1.81	2.03	-0.32	0.42
12DEC87	14:32	818	540	390	116	23360	392	0.43	0.43	1.82	2.08	-0.32	0.46
12DEC87	14:36	818	540	391	116	23104	394	0.40	0.40	1.83	2.08	-0.31	0.44
12DEC87	14:40	806	534	388	113	22656	391	0.38	0.38	1.80	2.05	-0.30	0.41
12DEC87	14:44	792	532	386	113	22208	389	0.41	0.41	1.77	2.09	-0.31	0.40
*12DEC87	14:48	808	534	383	114	21120	386	0.37	0.37	1.76	1.96	-0.31	0.41
*12DEC87	14:52	814	538	386	114	22592	390	0.39	0.39	1.79	2.03	-0.31	0.40
*12DEC87	14:56	824	542	390	114	23552	391	0.41	0.41	1.85	2.09	-0.32	0.42
*12DEC87	15:00	790	532	386	112	22848	390	0.35	0.35	1.71	1.98	-0.30	0.42
*12DEC87	15:04	776	522	378	113	20032	383	0.36	0.36	1.67	1.93	-0.30	0.42
*12DEC87	15:08	808	534	381	115	21696	382	0.39	0.39	1.82	2.04	-0.31	0.45
12DEC87	15:12	794	530	382	117	22208	385	0.36	0.36	1.72	1.95	-0.30	0.43
12DEC87	15:16	784	524	379	117	20480	384	0.36	0.36	1.69	1.94	-0.30	0.40
12DEC87	15:20	818	534	381	119	21760	383	0.39	0.39	1.84	2.04	-0.31	0.42
12DEC87	15:24	776	526	385	119	20224	386	0.38	0.38	1.76	2.07	2.24	0.32
*12DEC87	15:28	552	417	332	126	5	352	0.21	0.21	1.43	1.84	1.73	0.55
*12DEC87	15:32	512	398	306	151	5	317	0.18	0.18	1.32	1.69	-0.18	0.70
*12DEC87	15:36	566	410	307	161	11	314	0.10	0.10	1.16	1.35	0.84	0.17
*12DEC87	15:40	582	400	306	170	11	318	0.06	0.06	0.96	1.10	-0.13	0.09
*12DEC87	15:44	500	377	298	165	5	311	0.06	0.06	1.03	1.22	1.56	0.10
*12DEC87	15:48	468	374	290	161	5	298	0.07	0.07	1.08	1.30	-0.11	0.22
*12DEC87	15:52	534	392	294	166	-19	300	0.08	0.08	1.04	1.21	0.29	0.11
12DEC87	15:56	548	388	295	168	353	304	0.06	0.06	0.98	1.12	-0.05	0.09
12DEC87	16:00	556	393	297	167	359	305	0.08	0.08	1.04	1.19	0.70	0.06
12DEC87	16:04	572	408	303	160	414	307	0.13	0.13	1.18	1.35	1.80	0.02
12DEC87	16:08	608	430	314	165	499	317	0.16	0.16	1.15	1.30	2.77	-0.0048
12DEC87	16:12												
12DEC87	16:16												
12DEC87	16:20												
12DEC87	16:24												
12DEC87	16:28												
12DEC87	16:32												
12DEC87	16:36												
12DEC87	16:40	582	462	352	146	4960	365	0.10	0.10	1.07	1.26	0.23	0.32

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	ECON IN GAS T DEG F	ECON OUT GAS T DEG F	AH OUT GAS T DEG F	AIR HTR IN AIR T DEG F	GEN PWR KW	AH OUT AIR T DEG F	SHTR FLUE GAS DIF P IN H2O	SHTR GAS DIFF P IN H2O	ECON GAS DIFF P IN H2O	AH GAS DIFF P IN H2O	WNDBX-FCE DF P IN H2O	UNDGRT-FCE DF P IN H2O
12DEC87	16:44	522	397	315	163	3464	335	0.04	0.04	1.02	1.16	-0.21	0.29
12DEC87	16:48	584	426	317	165	7984	325	0.14	0.14	1.12	1.30	0.46	0.15
12DEC87	16:52	598	448	324	155	8768	326	0.22	0.22	1.38	1.62	1.49	0.26
12DEC87	16:56	656	484	342	161	11072	340	0.20	0.20	1.34	1.53	-0.29	0.26
12DEC87	17:00	704	498	358	160	12704	358	0.25	0.25	1.50	1.69	-0.30	0.38
12DEC87	17:04	748	501	367	158	15264	368	0.32	0.32	1.54	1.75	-0.31	0.38
12DEC87	17:08	758	503	370	150	17280	372	0.32	0.32	1.62	1.86	-0.29	0.36
12DEC87	17:12	824	528	380	139	21440	378	0.39	0.39	1.86	2.04	-0.32	0.43
12DEC87	17:16	824	540	393	127	23616	392	0.44	0.44	1.84	2.13	-0.33	0.42
12DEC87	17:20	808	532	390	120	23360	393	0.41	0.41	1.80	2.08	-0.31	0.44
12DEC87	17:24	796	532	387	116	22400	390	0.37	0.37	1.81	2.09	-0.32	0.46
12DEC87	17:28												
12DEC87	17:32												
12DEC87	17:36												
12DEC87	17:40												
12DEC87	17:44												
12DEC87	17:48	792	530	383	115	21184	387	0.36	0.36	1.80	2.07	-0.31	0.50
12DEC87	17:52	798	530	382	115	19840	383	0.43	0.43	1.82	2.12	-0.31	0.48
12DEC87	17:56	810	536	385	116	22208	385	0.39	0.39	1.81	2.08	-0.31	0.47
12DEC87	18:00	766	518	375	116	19520	380	0.37	0.37	1.70	2.00	-0.30	0.54
12DEC87	18:04	818	536	384	118	22080	383	0.42	0.42	1.83	2.09	-0.32	0.46
12DEC87	18:08	814	536	387	117	21696	388	0.38	0.38	1.80	2.06	-0.31	0.47
12DEC87	18:12	810	532	386	116	21888	389	0.39	0.39	1.79	2.03	-0.32	0.40
12DEC87	18:16	822	536	388	116	22144	390	0.43	0.43	1.80	2.07	-0.32	0.41
12DEC87	18:20	790	528	387	115	22528	392	0.36	0.36	1.74	1.99	-0.31	0.46
12DEC87	18:24	818	536	385	115	21824	387	0.38	0.38	1.79	2.01	-0.31	0.42
12DEC87	18:28	802	540	392	115	21760	394	0.44	0.44	1.97	2.28	-0.33	0.47
12DEC87	18:32	836	550	396	113	22464	393	0.50	0.50	2.00	2.30	0.86	0.45
12DEC87	18:36	770	526	388	111	21120	391	0.47	0.47	1.83	2.30	2.23	0.58
12DEC87	18:40												
12DEC87	18:44	706	483	358	119	9088	364	0.46	0.46	1.69	2.20	2.15	0.59
12DEC87	18:48	684	472	350	131	6784	354	0.37	0.37	1.75	2.14	1.96	0.45
12DEC87	18:52	658	470	347	141	6240	350	0.43	0.43	1.77	2.21	2.09	0.50
12DEC87	18:56	644	457	343	147	2848	346	0.39	0.39	1.70	2.11	3.08	0.50
12DEC87	19:00	664	464	344	148	2816	345	0.35	0.35	1.70	2.05	3.38	0.47
12DEC87	19:04	668	464	344	151	3104	345	0.37	0.37	1.68	2.02	3.38	0.47
12DEC87	19:08	676	468	344	152	3288	345	0.32	0.32	1.59	1.87	3.45	0.43
12DEC87	19:12	686	489	351	152	3512	349	0.33	0.33	1.64	1.92	3.58	0.43
12DEC87	19:16	692	505	361	151	3864	358	0.36	0.36	1.72	2.05	3.63	0.44
12DEC87	19:20	690	510	367	150	5392	364	0.32	0.32	1.63	1.92	3.45	0.45
12DEC87	19:24	662	499	365	150	7440	367	0.27	0.27	1.49	1.78	3.05	0.12
12DEC87	19:28												

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	ECON IN GAS T DEG F	ECON OUT GAS T DEG F	AH OUT GAS T DEG F	AIR HTR IN AIR T DEG F	GEN PWR KW	AH OUT AIR T DEG F	SHTR FLUE GAS DIF P IN H2O	SHTR GAS DIFF P IN H2O	ECON GAS DIFF P IN H2O	AH GAS DIFF P IN H2O	WNDBX-FCE DF P IN H2O	UNDGRT-FCE DF P IN H2O
12DEC87	19:32												
12DEC87	19:36												
12DEC87	19:40												
		761	513	372	127	17531	375	0.35	0.35	1.69	1.95	0.34	0.42

* = NON-TEST PERIOD, VALUE NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR OUT GAS P IN H2O	AH IN GAS P IN H2O	AH OUT GAS P IN H2O	EXCESS O2 %	EXCESS O2 %	GAS FLOW KSCFH	STM TRBN IN STM T DEG F	FUEL OIL FLOW GPM	TOT HEAT RELEASE MBTUH	RDF HEAT RELEASE MBTUH	FDR A SPEED %	FDR B SPEED %
		PI368	PI369	PI370	AI321A	AI321B	FI332	TI101	FI333	UI399	UI399A	SI301	SI302
#12DEC87	11:12	-1.11	-2.79	-4.78	4.86	6.92	-0.03	768	-0.00	182.00	182.00	64.25	76.50
#12DEC87	11:16	-1.09	-2.82	-4.81	6.44	8.84	-0.03	754	-0.00	132.50	132.50	75.00	88.25
12DEC87	11:20	-1.17	-3.00	-4.97	4.23	6.25	-0.03	746	-0.00	165.50	165.50	73.50	86.00
12DEC87	11:24	-1.06	-2.88	-4.77	5.22	7.50	-0.03	748	-0.00	160.00	160.50	64.00	76.50
12DEC87	11:28	-1.06	-2.59	-4.63	6.17	8.47	-0.03	746	-0.00	141.00	141.00	61.63	74.00
12DEC87	11:32	-1.11	-2.92	-4.91	5.33	7.53	-0.03	750	-0.00	150.00	150.00	65.25	77.25
12DEC87	11:36	-0.80	-2.80	-4.78	5.47	7.42	15.00	752	-0.00	151.00	136.50	71.75	84.25
12DEC87	11:40	-0.80	-2.52	-4.61	9.94	12.28	22.69	766	-0.00	120.50	97.50	76.75	89.25
#12DEC87	11:44	-1.27	-3.32	-5.59	5.34	7.08	17.94	768	-0.00	163.50	145.50	50.63	62.63
#12DEC87	11:48	-1.16	-2.83	-4.94	7.91	9.75	12.97	770	-0.00	124.25	111.25	44.38	55.50
#12DEC87	11:52	-0.92	-2.73	-4.84	7.50	10.13	-0.03	758	-0.00	133.50	133.50	49.38	61.13
#12DEC87	11:56	-1.33	-3.43	-5.77	5.89	8.44	-0.03	744	-0.00	154.00	154.50	54.63	66.50
12DEC87	12:00	-1.11	-2.89	-4.92	5.58	7.86	-0.03	748	-0.00	155.50	155.50	51.75	63.88
12DEC87	12:04	-0.84	-2.83	-4.98	5.45	8.25	-0.03	758	-0.00	152.00	152.00	52.25	64.25
12DEC87	12:08	-1.49	-3.24	-5.42	5.59	7.83	-0.03	760	-0.00	152.00	152:00	52.00	64.25
12DEC87	12:12	-1.02	-2.84	-4.91	5.44	7.72	-0.03	750	-0.00	156.50	156.50	51.50	62.88
12DEC87	12:16	-1.25	-3.02	-5.02	6.22	8.44	-0.03	748	-0.00	148.00	148.00	53.13	65.25
12DEC87	12:20	-1.39	-3.09	-4.98	5.58	7.89	-0.03	750	-0.00	151.50	152.00	62.38	75.00
12DEC87	12:24	-1.18	-2.98	-4.98	6.05	8.44	-0.03	744	-0.00	157.50	157.50	58.63	70.50
12DEC87	12:28	-0.79	-2.55	-4.38	5.97	8.28	-0.03	740	-0.00	140.00	140.00	65.50	78.00
12DEC87	12:32	-1.37	-3.25	-5.42	4.80	6.91	-0.03	758	-0.00	155.50	155.50	68.00	80.00
12DEC87	12:36	-0.93	-2.48	-4.45	4.91	7.16	-0.03	766	-0.00	167.00	167.50	56.63	68.50
12DEC87	12:40	-1.22	-2.92	-4.80	7.19	9.44	-0.03	754	-0.00	157.50	157.50	34.25	45.50
12DEC87	12:44	-1.16	-2.88	-4.91	5.64	7.84	-0.03	736	-0.00	138.00	138.00	47.00	58.50
12DEC87	12:48	-1.14	-3.07	-5.08	6.00	8.19	-0.03	738	-0.00	139.00	139.00	52.00	64.00
12DEC87	12:52	-1.38	-2.95	-4.98	6.52	8.56	-0.03	738	-0.00	135.50	135.50	50.13	62.38
12DEC87	12:56	-1.00	-2.65	-4.58	5.27	7.41	-0.03	744	-0.00	165.00	165.00	50.50	62.38
12DEC87	13:00	-1.08	-2.81	-4.81	6.30	8.56	-0.03	746	-0.00	146.50	146.50	48.50	60.75
#12DEC87	13:04	-1.39	-3.05	-5.06	5.78	7.95	-0.03	754	-0.00	148.50	148.50	52.50	64.50
#12DEC87	13:08	-1.12	-2.86	-4.88	5.64	7.73	-0.03	760	-0.00	162.00	162.50	52.13	64.00
#12DEC87	13:12	-1.04	-2.90	-4.84	5.64	7.88	-0.03	756	-0.00	158.00	158.50	45.63	57.25
#12DEC87	13:16	-1.22	-2.99	-5.03	6.28	8.53	-0.03	746	-0.00	138.50	138.50	50.63	62.25
#12DEC87	13:20	-0.94	-2.38	-4.33	5.95	8.31	-0.03	742	-0.00	142.00	142.00	62.88	75.50
#12DEC87	13:24	-1.05	-2.91	-4.86	3.94	5.92	-0.03	758	-0.00	171.50	171.50	60.25	72.25
12DEC87	13:28	-1.33	-2.95	-5.06	5.64	7.88	-0.03	776	-0.00	157.00	157.00	48.38	60.50
12DEC87	13:32	-1.20	-2.90	-4.80	6.84	9.19	-0.03	762	-0.00	151.50	151.50	44.88	56.25
12DEC87	13:36	-0.95	-2.65	-4.50	6.45	8.66	-0.03	740	-0.00	134.50	134.50	52.50	64.25
12DEC87	13:40	-1.21	-2.95	-4.94	5.28	7.56	-0.03	742	-0.00	155.50	155.50	55.00	66.75
12DEC87	13:44	-1.14	-2.85	-4.88	4.94	7.17	-0.03	760	-0.00	162.00	162.00	52.63	64.50
12DEC87	13:48	-0.90	-2.75	-4.77	6.94	9.34	-0.03	758	-0.00	153.00	153.50	44.88	56.63
12DEC87	13:52	-1.19	-2.77	-4.78	6.59	9.03	-0.03	740	-0.00	132.00	132.00	55.25	67.25

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR OUT GAS P IN H2O	AH IN GAS P IN H2O	AH OUT GAS P IN H2O	EXCESS O2 %	EXCESS O2 %	GAS FLOW KSCFH	STM TRBN IN STM T DEG F	FUEL OIL FLOW GPM	TOT HEAT RELEASE MBTUH	RDF HEAT RELEASE MBTUH	FDR A SPEED %	FDR B SPEED %
12DEC87	13:56	-1.11	-2.93	-4.75	5.11	7.28	-0.03	742	-0.00	156.50	156.50	65.50	78.00
12DEC87	14:00	-1.08	-2.97	-4.94	5.94	8.19	-0.03	758	-0.00	160.00	160.00	68.00	80.25
12DEC87	14:04	-1.35	-2.98	-5.11	5.47	7.84	-0.03	750	-0.00	152.50	152.50	70.75	83.25
12DEC87	14:08	-0.74	-2.39	-4.23	5.78	8.19	-0.03	742	-0.00	141.50	141.50	82.75	95.50
12DEC87	14:12	-1.06	-2.76	-4.75	6.30	8.59	-0.03	752	-0.00	152.50	152.50	74.25	86.25
12DEC87	14:16	-1.45	-3.11	-5.16	4.97	7.30	-0.03	758	-0.00	151.00	151.00	80.75	93.75
12DEC87	14:20	-1.01	-2.72	-4.67	7.06	9.69	-0.03	752	-0.00	155.50	155.50	78.25	91.00
12DEC87	14:24	-1.03	-2.99	-4.95	3.95	6.03	-0.03	746	-0.00	157.50	157.50	82.00	95.00
12DEC87	14:28	-1.46	-3.27	-5.39	4.59	6.70	-0.03	770	-0.00	160.00	160.00	75.75	88.25
12DEC87	14:32	-0.72	-2.59	-4.70	4.78	6.80	-0.03	778	-0.00	161.00	161.00	67.50	79.25
12DEC87	14:36	-1.06	-2.78	-4.86	4.86	6.95	-0.03	776	-0.00	156.50	157.00	58.13	70.00
12DEC87	14:40	-1.11	-3.01	-5.20	5.42	7.55	-0.03	768	-0.00	148.00	148.00	56.25	68.25
12DEC87	14:44	-1.00	-2.56	-4.44	6.63	9.00	-0.03	758	-0.00	154.50	154.50	58.13	69.75
*12DEC87	14:48	-0.93	-2.78	-4.72	5.27	7.48	-0.03	738	-0.00	150.50	150.50	66.00	78.00
*12DEC87	14:52	-0.98	-2.81	-4.95	5.30	7.53	-0.03	746	-0.00	154.00	154.50	61.88	73.50
*12DEC87	14:56	-1.11	-2.76	-4.81	4.69	6.86	-0.03	762	-0.00	162.50	163.00	55.63	67.25
*12DEC87	15:00	-1.19	-2.86	-4.78	7.08	9.63	-0.03	762	-0.00	151.00	151.00	47.75	59.75
*12DEC87	15:04	-0.73	-2.24	-4.19	7.02	9.53	-0.03	734	-0.00	134.00	134.00	52.88	64.75
*12DEC87	15:08	-0.87	-2.57	-4.59	5.28	7.61	-0.03	730	-0.00	159.50	159.50	60.00	72.00
12DEC87	15:12	-1.04	-2.91	-4.95	6.23	8.69	-0.03	744	-0.00	151.50	151.50	52.13	63.88
12DEC87	15:16	-0.91	-2.51	-4.50	6.91	9.34	-0.03	740	-0.00	138.50	138.50	54.88	66.75
12DEC87	15:20	-0.82	-2.49	-4.39	5.03	7.22	-0.03	742	-0.00	158.00	158.00	62.75	75.00
12DEC87	15:24	-0.45	-2.05	-4.14	8.75	10.53	31.00	760	-0.00	133.50	102.50	54.25	66.00
*12DEC87	15:28	-1.06	-2.48	-4.28	17.44	20.38	-0.03	754	-0.00	-37.88	-37.75	-0.12	-0.15
*12DEC87	15:32	-1.20	-2.40	-3.95	18.38	20.63	-0.03	744	-0.00	4.75	4.81	-0.12	-0.15
*12DEC87	15:36	-1.06	-2.24	-3.63	17.81	19.38	13.75	732	-0.00	-3.25	-17.00	-0.12	-0.15
*12DEC87	15:40	-0.81	-1.87	-3.01	17.75	19.63	13.09	722	-0.00	-4.08	-17.19	-0.12	-0.15
*12DEC87	15:44	-0.62	-1.64	-2.84	19.13	20.88	-0.03	704	-0.00	-1.06	-0.95	-0.12	-0.15
*12DEC87	15:48	-0.82	-1.75	-2.95	19.31	21.13	-0.03	666	-0.00	38.50	38.50	-0.12	-0.15
*12DEC87	15:52	-0.68	-1.54	-2.64	18.13	19.63	13.31	638	-0.00	18.25	4.92	-0.12	-0.15
*12DEC87	15:56	-0.89	-1.85	-3.02	17.88	19.50	15.88	608	-0.00	14.44	-1.41	-0.12	-0.15
*12DEC87	16:00	-0.82	-1.83	-3.08	17.31	18.56	21.81	584	-0.00	8.78	-13.03	-0.12	-0.15
*12DEC87	16:04	-0.84	-2.01	-3.37	16.44	17.50	32.38	572	-0.00	13.34	-19.13	-0.12	-0.15
*12DEC87	16:08	-0.82	-2.08	-3.45	14.94	16.44	42.38	576	-0.00	13.44	-29.06	-0.13	-0.15
*12DEC87	16:12	-1.03	-2.27	-3.59	14.78	16.19	43.38	594	-0.00	16.69	-26.81	-0.12	-0.15
*12DEC87	16:16	-0.88	-2.33	-3.84	14.97	16.38	43.25	626	-0.00	19.44	-23.81	8.66	-0.15
*12DEC87	16:20	-1.31	-3.00	-4.61	12.94	14.38	43.38	664	-0.00	21.06	-22.38	8.69	17.69
*12DEC87	16:24	-0.93	-2.70	-4.25	12.06	13.56	43.25	710	-0.00	19.31	-24.06	8.66	18.25
*12DEC87	16:28	-0.87	-2.33	-3.75	14.63	16.00	12.75	778	-0.00	11.00	-1.74	1.51	19.63
*12DEC87	16:32	-0.59	-1.70	-3.06	14.72	16.00	12.75	800	-0.00	44.13	31.38	-0.13	19.69
*12DEC87	16:36	-1.07	-2.30	-3.73	15.53	17.06	12.81	774	-0.00	74.25	61.38	-0.12	19.69
*12DEC87	16:40	-0.92	-1.90	-3.16	15.97	17.69	6.27	712	-0.00	-2.59	-9.03	7.91	10.44

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR OUT GAS P IN H20	AH IN GAS P IN H20	AH OUT GAS P IN H20	EXCESS 02 %	EXCESS 02 %	GAS FLOW KSCFH	STM TRBN IN STM T DEG F	FUEL OIL FLOW GPM	TOT HEAT RELEASE MBTUH	RDF HEAT RELEASE MBTUH	FDR A SPEED %	FDR B SPEED %
*12DEC87	16:44	-0.97	-2.02	-3.22	17.38	19.44	-0.03	688	-0.00	0.01	0.05	14.75	17.69
*12DEC87	16:48	-0.51	-2.00	-3.38	13.78	15.88	-0.03	734	-0.00	30.19	30.25	20.69	13.47
*12DEC87	16:52	-0.35	-1.57	-3.20	14.31	16.38	-0.03	752	-0.00	41.75	41.88	19.56	30.50
*12DEC87	16:56	-0.93	-2.08	-3.66	10.25	12.25	-0.03	684	-0.00	97.25	97.25	33.88	45.63
*12DEC87	17:00	-0.86	-2.34	-4.08	8.47	10.47	-0.03	662	-0.00	82.25	82.50	51.88	64.50
*12DEC87	17:04	-0.80	-2.29	-3.95	7.22	9.19	-0.03	690	-0.00	107.25	107.25	69.50	82.50
*12DEC87	17:08	-0.78	-2.48	-4.33	7.06	9.28	-0.03	730	-0.00	124.00	124.00	80.75	94.00
*12DEC87	17:12	-1.01	-2.97	-5.17	3.36	5.09	-0.03	758	-0.00	167.50	168.00	91.00	101.00
*12DEC87	17:16	-1.18	-2.91	-5.03	4.47	6.34	-0.03	778	-0.00	174.00	174.00	70.50	83.25
*12DEC87	17:20	-1.17	-3.13	-5.25	5.83	8.00	-0.03	782	-0.00	154.00	154.50	64.75	77.50
*12DEC87	17:24	-1.59	-3.27	-5.39	6.11	8.31	-0.03	758	-0.00	154.50	154.50	67.00	79.25
*12DEC87	17:28	-0.75	-2.48	-4.44	7.25	9.81	-0.03	730	-0.00	123.25	123.25	82.75	95.75
*12DEC87	17:32	-0.89	-2.73	-4.80	5.45	7.66	-0.03	722	-0.00	147.50	148.00	85.50	98.50
*12DEC87	17:36	-1.25	-3.13	-5.30	6.03	8.25	-0.03	736	-0.00	155.00	155.00	92.75	101.00
*12DEC87	17:40	-1.00	-2.76	-4.92	4.78	6.77	-0.03	748	-0.00	166.00	166.00	91.75	101.00
*12DEC87	17:44	-1.01	-2.81	-4.89	5.44	7.61	-0.03	760	-0.00	160.50	160.50	81.75	94.75
*12DEC87	17:48	-1.51	-3.59	-5.73	6.95	9.41	-0.03	752	-0.00	145.00	145.00	80.00	92.75
*12DEC87	17:52	-0.89	-2.50	-4.53	6.42	8.72	-0.03	738	-0.00	135.50	135.50	94.50	101.00
*12DEC87	17:56	-1.24	-2.98	-5.05	6.03	8.25	-0.03	746	-0.00	157.00	157.00	97.25	101.00
*12DEC87	18:00	-1.10	-3.06	-5.14	8.72	11.84	-0.03	746	-0.00	87.75	88.00	97.25	101.00
*12DEC87	18:04	-1.06	-2.97	-5.00	5.03	7.20	-0.03	752	-0.00	161.50	161.50	97.25	101.00
*12DEC87	18:08	-1.16	-3.09	-5.16	5.72	7.89	-0.03	756	-0.00	158.50	158.50	88.25	100.25
*12DEC87	18:12	-1.31	-3.23	-5.19	5.56	7.80	-0.03	752	-0.00	148.00	148.50	86.25	99.00
12DEC87	18:16	-1.03	-2.77	-4.73	4.44	6.44	-0.03	752	-0.00	159.00	159.00	77.75	91.00
12DEC87	18:20	-1.43	-2.77	-4.70	5.91	8.16	-0.03	762	-0.00	143.50	143.50	74.75	87.75
12DEC87	18:24	-1.09	-2.97	-5.08	4.42	6.33	-0.03	760	-0.00	156.50	156.50	93.75	101.00
12DEC87	18:28	-1.20	-3.30	-5.50	6.27	8.88	-0.03	752	-0.00	147.00	147.00	79.00	91.75
12DEC87	18:32	-1.31	-3.35	-5.64	4.53	6.31	20.13	748	-0.00	165.00	145.00	73.25	85.75
*12DEC87	18:36	-2.13			10.84	12.84	35.25	772	-0.00	133.50	98.00	-0.12	47.00
*12DEC87	18:40	-1.70			10.50	12.34	35.38	754	-0.00	87.00	51.38	24.31	34.75
*12DEC87	18:44	-1.83			13.38	15.34	35.50	752	-0.00	46.88	11.28	17.00	27.25
*12DEC87	18:48	-1.82	-4.00	-6.23	14.06	15.72	34.50	740	-0.00	65.75	31.38	13.25	22.75
*12DEC87	18:52	-0.90	-2.67	-4.80	14.81	16.63	35.38	704	-0.00	59.50	23.94	10.16	19.69
*12DEC87	18:56	-1.47	-3.20	-5.25	15.25	16.94	42.63	680	-0.00	34.38	-8.28	-0.12	-0.15
*12DEC87	19:00	-1.53	-3.45	-5.56	15.13	16.38	48.25	686	-0.00	32.13	-16.19	-0.12	-0.15
*12DEC87	19:04	-1.20	-2.99	-4.97	15.03	16.31	48.63	702	-0.00	21.56	-27.13	-0.12	-0.15
*12DEC87	19:08	-0.94	-2.56	-4.47	15.03	16.25	49.63	722	-0.00	21.75	-27.94	-0.12	-0.15
*12DEC87	19:12	-0.98	-2.69	-4.67	14.88	16.00	52.13	744	-0.00	27.50	-24.75	-0.12	-0.15
*12DEC87	19:16	-1.02	-2.57	-4.52	14.84	16.00	52.50	760	-0.00	26.25	-26.44	-0.12	-0.15
*12DEC87	19:20	-1.00	-2.70	-4.63	15.00	16.19	45.25	756	-0.00	37.63	-7.72	-0.12	-0.15
*12DEC87	19:24	-1.19	-2.70	-4.38	15.13	16.63	40.50	708	-0.00	50.50	9.91	-0.12	-0.15
*12DEC87	19:28	-0.93	-2.26	-3.78	14.91	16.38	39.88	678	-0.00	47.75	7.89	-0.12	-0.15

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	SHTR OUT GAS P IN H2O	AH IN GAS P IN H2O	AH OUT GAS P IN H2O	EXCESS O2 %	EXCESS O2 %	GAS FLOW KSCFH	STM TRBN IN STM T DEG F	FUEL OIL FLOW GPM	TOT HEAT RELEASE MBTUH	RDF HEAT RELEASE MBTUH	FDR A SPEED %	FDR B SPEED %
*12DEC87	19:32	-1.04	-2.31	-3.86	14.97	16.38	40.38	680	-0.00	41.63	1.04	-0.12	-0.15
*12DEC87	19:36	-0.92	-2.13	-3.62	14.89	16.31	40.39	682	-0.00	39.38	-1.07	-0.12	-0.15
	AVERAGE	-1.09	-2.84	-4.86	5.78	8.02	1.71	752	-0.00	151.18	149.49	61.99	74.05

* = NON-TEST PERIOD, VALUE NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DST CLTR GAS DF P IN H2O	ABSR IN GAS P IN H2O	ABSR OUT GAS P IN H2O	ABSR GAS DIFF P IN H2O	BGHSE DIFF P IN H2O	ID FAN SUCT P IN H2O	ABSR IN GAS T DEG F	ABSR OUT GAS T DEG F	OUTLET GAS SO2 PPMV	CORRTD GAS SO2 %	OUTLET GAS NOX PPMV	LIME SLRY FEED GPM
		DPI371	PI371	PI372	DPI372	DPI373	PI373	TI3206	TI3228	AI3804	AI3804B	AI3804A	FI3202
*12DEC87	11:12	3.46	-8.19	-12.91	4.75	8.47	-21.38	383	289	3.05	0.37	-0.01	7.39
*12DEC87	11:16	3.51	-5.92	-13.03	4.84	8.47	-21.50	383	289	8.81	1.05	-0.01	7.38
12DEC87	11:20	3.23	-5.02	-13.84	5.77	7.58	-21.81	382	268	10.53	1.27	-0.01	7.38
12DEC87	11:24	3.48	-6.36	-13.16	5.03	8.66	-22.00	383	273	8.94	1.07	-0.01	7.36
12DEC87	11:28	3.41	-8.06	-13.16	4.86	8.53	-21.38	383	288	10.81	1.30	-0.01	7.33
12DEC87	11:32	3.27	-2.29	-13.22	5.33	7.38	-21.06	382	284	11.78	1.42	-0.01	7.33
12DEC87	11:36	3.61	-6.94	-13.53	5.22	8.44	-22.13	382	269	9.59	1.11	-0.01	7.28
12DEC87	11:40	3.61	-7.84	-13.47	5.28	9.00	-22.75	383	279	4.09	0.47	-0.01	7.27
*12DEC87	11:44	2.96	-2.60	-14.78	6.73	8.31	-23.50	383	289	9.09	1.05	-0.01	7.25
*12DEC87	11:48	3.34	-7.61	-14.09	5.55	8.75	-22.75	383	278	7.78	0.90	-0.01	7.22
*12DEC87	11:52	3.57	-7.72	-14.31	5.59	8.78	-22.88	382	269	8.22	0.98	-0.01	7.22
*12DEC87	11:56	3.01	-7.67	-15.34	6.78	8.31	-23.63	380	283	9.06	1.08	-0.01	7.17
12DEC87	12:00	3.38	-7.45	-13.75	5.61	8.97	-23.06	383	289	12.72	1.50	-0.01	7.13
12DEC87	12:04	3.52	-7.70	-14.06	5.64	9.03	-23.13	385	273	6.61	0.79	-0.01	7.13
12DEC87	12:08	2.93	-7.81	-14.75	6.47	7.91	-22.81	387	272	7.06	0.84	-0.01	8.09
12DEC87	12:12	3.51	-7.61	-13.63	5.17	8.47	-22.06	388	284	4.20	0.50	-0.01	8.03
12DEC87	12:16	3.41	-7.55	-13.66	5.14	8.78	-22.38	387	283	5.42	0.66	-0.01	8.00
12DEC87	12:20	3.20	-7.67	-13.81	5.64	7.77	-21.75	385	272	3.58	0.42	-0.01	7.97
12DEC87	12:24	3.45		-13.16	4.84	8.16	-21.19	385	277	7.34	0.88	-0.01	7.92
12DEC87	12:28	3.45	-7.88	-12.69	4.84	8.31	-21.13	383	285	7.92	0.96	-0.01	7.91
12DEC87	12:32	3.24		-14.16	5.44	7.72	-21.56	383	281	7.59	0.91	-0.01	7.86
12DEC87	12:36	3.40		-12.81	4.88	8.16	-21.25	385	274	2.48	0.29	-0.01	7.84
12DEC87	12:40	3.34	-8.22	-12.84	4.67	8.34	-21.13	386	279	3.08	0.37	-0.01	7.84
12DEC87	12:44	3.39		-13.22	4.77	7.55	-20.44	382	281	7.61	0.91	-0.01	7.84
12DEC87	12:48	3.36		-13.03	4.86	7.83	-20.75	380	281	2.48	0.30	-0.01	7.81
12DEC87	12:52	3.33		-13.78	5.09	7.70	-21.19	381	279	2.13	0.25	-0.01	7.83
12DEC87	12:56	3.43		-12.66	4.88	8.06	-21.13	381	278	13.38	1.60	-0.01	7.78
12DEC87	13:00	3.36	-8.16	-12.81	4.67	8.53	-21.13	381	280	-0.82	-0.10	-0.01	7.81
*12DEC87	13:04	3.38		-13.88	5.06	7.88	-21.31	382	280	2.25	0.27	-0.01	7.73
*12DEC87	13:08	3.45		-13.06	4.89	7.81	-21.00	383	279	15.41	1.85	-0.01	7.75
*12DEC87	13:12	3.38	-8.22	-12.78	4.64	8.16	-20.81	384	278	4.75	0.57	-0.01	7.73
*12DEC87	13:16	3.32		-13.56	4.88	7.94	-20.63	383	279	7.83	0.94	-0.01	7.72
*12DEC87	13:20	3.39		-12.59	4.86	7.94	-20.94	381	278	0.76	0.10	-0.01	7.70
*12DEC87	13:24	3.42	-8.28	-13.09	4.77	8.41	-21.25	382	281	1.57	0.19	-0.01	7.86
12DEC87	13:28	3.33		-13.84	5.08	7.98	-21.44	385	281	10.56	1.27	-0.01	7.88
12DEC87	13:32	3.30		-12.78	5.08	7.80	-21.13	385	276	3.76	0.45	-0.01	7.84
12DEC87	13:36	3.34	-7.94	-12.69	4.72	8.50	-21.13	382	275	3.94	0.47	-0.01	7.84
12DEC87	13:40	3.39		-13.78	4.98	8.22	-21.44	381	281	12.91	1.55	-0.01	7.88
12DEC87	13:44	3.38		-13.41	5.41	7.86	-21.69	383	283	-0.08	-0.01	-0.01	7.91
12DEC87	13:48	3.45	-8.19	-13.06	4.84	8.38	-21.38	384	277	-0.44	-0.05	-0.01	7.91
12DEC87	13:52	3.38		-13.44	4.83	8.28	-21.25	382	274	8.03	0.96	-0.01	7.94

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DST CLTR GAS DF P IN H2O	ABSR IN GAS P IN H2O	ABSR OUT GAS P IN H2O	ABSR GAS DIFF P IN H2O	BGHSE DIFF P IN H2O	ID FAN SUCT P IN H2O	ABSR IN GAS T DEG F	ABSR OUT GAS T DEG F	OUTLET GAS SO2 PPMV	CORRTD GAS SO2 %	OUTLET GAS NOX PPMV	LIME SLRY FEED GPM
12DEC87	13:56	3.41		-13.00	5.05	7.80	-21.13	381	280	5.72	0.69	-0.01	7.92
12DEC87	14:00	3.37	-8.09	-12.78	4.77	8.44	-21.31	382	284	1.50	0.18	-0.01	7.91
12DEC87	14:04	3.36		-13.88	4.95	8.06	-21.25	382	277	10.72	1.29	-0.01	7.88
12DEC87	14:08	3.49		-12.59	4.92	7.61	-20.63	381	274	1.04	0.13	-0.01	7.88
12DEC87	14:12	3.42	-8.22	-13.06	4.77	8.69	-21.56	382	282	2.95	0.35	-0.01	7.84
12DEC87	14:16	3.41		-14.16	5.00	8.50	-21.81	383	284	8.75	1.05	-0.01	7.84
12DEC87	14:20	3.34		-12.75	5.00	7.42	-20.75	383	275	1.91	0.23	-0.01	7.81
12DEC87	14:24	3.47		-13.34	4.91	8.34	-21.31	383	276	13.44	1.61	-0.01	7.81
12DEC87	14:28	3.43		-14.44	5.03	8.69	-22.06	385	285	11.78	1.41	-0.01	7.78
12DEC87	14:32	3.30		-12.97	5.45	7.75	-21.56	387	282	3.01	0.36	-0.01	7.73
12DEC87	14:36	3.34		-13.66	5.36	8.63	-22.38	389	273	8.84	1.06	-0.01	7.72
12DEC87	14:40	3.54		-14.22	5.06	8.44	-21.88	389	278	0.22	0.03	-0.01	7.73
12DEC87	14:44	3.12		-12.81	5.63	7.52	-21.50	388	283	-0.88	-0.11	-0.01	7.70
#12DEC87	14:48	3.48		-13.06	4.80	8.59	-21.50	386	277	8.78	1.05	-0.01	7.73
#12DEC87	14:52	3.53		-13.50	4.98	8.72	-22.13	386	276	-0.82	-0.10	-0.01	7.75
#12DEC87	14:56	3.32		-13.38	5.41	7.48	-21.38	388	282	-0.81	-0.10	-0.01	7.70
#12DEC87	15:00	3.45		-13.16	4.75	8.28	-21.25	388	281	6.88	0.82	-0.01	7.66
#12DEC87	15:04	3.38	-7.84	-12.69	4.66	8.38	-21.06	385	274	3.01	0.36	-0.01	7.66
#12DEC87	15:08	3.30		-13.00	5.25	7.58	-21.19	383	277	1.00	0.12	-0.01	7.70
12DEC87	15:12	3.42	-8.22	-12.91	4.77	8.44	-21.38	383	285	5.83	0.70	-0.01	7.64
12DEC87	15:16	3.41	-8.03	-12.94	4.77	8.25	-21.06	382	280	3.01	0.36	-0.01	7.61
12DEC87	15:20	3.51		-13.00	5.22	7.44	-21.00	382	273	1.96	0.23	-0.01	7.59
12DEC87	15:24	3.60		-13.28	5.17	9.06	-22.63	384	281	0.05	0.01	-0.01	7.58
#12DEC87	15:28	3.36	-7.52	-11.97	4.64	8.47	-20.94	371	290	18.38	2.20	-0.01	0.00
#12DEC87	15:32	3.02	-6.73	-10.59	4.14	6.53	-18.06	346	276	17.50	2.10	-0.01	0.00
#12DEC87	15:36	2.30	-5.92	-9.16	3.23	5.97	-14.91	331	258	17.50	2.10	-0.01	0.00
#12DEC87	15:40	1.77	-4.84	-7.44	2.55	4.31	-11.38	324	275	9.72	1.17	-0.01	0.00
#12DEC87	15:44	2.09	-4.95	-7.88	2.94	4.83	-12.75	319	290	22.25	2.65	-0.01	0.00
#12DEC87	15:48	2.25	-5.05	-7.97	3.10	5.09	-13.78	311	289	7.83	0.94	-0.01	0.00
#12DEC87	15:52	2.05	-4.48	-7.06	2.82	4.72	-12.75	306	270	9.72	0.70	-0.01	0.00
#12DEC87	15:56	1.84	-4.98	-7.70	2.59	4.42	-11.69	305	267	18.38	0.97	-0.01	0.00
#12DEC87	16:00	1.98	-5.17	-8.09	2.75	4.66	-12.34	304	279	3.01	0.36	-0.01	0.00
#12DEC87	16:04	2.30	-5.69	-8.88	3.17	5.14	-13.97	305	287	17.44	2.09	-0.01	0.08
#12DEC87	16:08	2.19	-5.73	-8.81	2.99	4.98	-13.38	310	289	5.83	0.70	-0.01	0.07
#12DEC87	16:12	2.20	-5.70	-8.63	3.02	4.98	-13.56	317	281	8.78	1.05	-0.01	0.08
#12DEC87	16:16	2.58	-6.41	-9.88	3.52	5.47	-15.31	325	271	17.50	2.09	-0.01	0.09
#12DEC87	16:20	2.68	-7.42	-11.16	3.66	6.66	-16.88	334	283	13.59	1.63	-0.01	0.25
#12DEC87	16:24	2.77	-7.02	-10.56	3.77	6.31	-16.88	345	291	10.78	1.29	-0.01	0.21
#12DEC87	16:28	2.35	-6.16	-9.44	3.23	6.22	-15.56	355	274	19.44	1.80	-0.01	0.21
#12DEC87	16:32	2.11	-5.22	-8.22	2.93	5.61	-13.88	359	266	11.75	1.22	-0.01	0.21
#12DEC87	16:36	2.27	-6.03	-9.25	3.16	5.17	-14.06	360	289	24.25	2.75	-0.01	0.19
#12DEC87	16:40	2.01	-5.17	-8.00	2.77	4.95	-13.09	358	290	4.92	0.54	-0.01	0.19

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DST CLTR GAS DF P IN H2O	ABSR IN GAS P IN H2O	ABSR OUT GAS P IN H2O	ABSR GAS DIFF P IN H2O	BGHSE DIFF P IN H2O	ID FAN SUCT P IN H2O	ABSR IN GAS T DEG F	ABSR OUT GAS T DEG F	OUTLET GAS SO2 PPMV	CORRTD GAS SO2 %	OUTLET GAS NOX PPMV	LIME SLRY FEED GPM
#12DEC87	16:44	1.89	-5.11	-7.81	2.65	4.80	-12.31	345	256	9.72	1.09	-0.01	0.17
#12DEC87	16:48	2.22	-5.84	-9.03	3.05	5.31	-13.69	333	264	13.59	1.59	-0.01	0.18
#12DEC87	16:52	2.39	-6.13	-10.13	3.91	7.45	-18.06	330	275	5.88	0.69	-0.01	6.22
#12DEC87	16:56	2.59	-6.31	-9.97	3.55	7.28	-17.19	334	275	12.69	1.52	-0.01	6.05
#12DEC87	17:00	2.93	-7.23	-11.38	3.98	7.06	-18.00	344	279	14.66	1.76	-0.01	8.47
#12DEC87	17:04	3.05	-7.05	-11.13	4.16	7.30	-18.69	354	281	9.72	1.17	-0.01	8.59
#12DEC87	17:08	3.26	-7.64	-12.16	4.44	8.25	-20.19	362	283	7.83	0.94	-0.01	8.44
#12DEC87	17:12	3.45		-14.06	5.13	8.19	-21.50	369	287	10.78	1.29	-0.01	8.34
#12DEC87	17:16	3.25		-13.66	5.53	8.34	-22.31	379	291	4.92	0.59	-0.01	8.28
#12DEC87	17:20	3.42		-13.56	5.22	8.53	-22.19	385	276	6.88	0.82	-0.01	8.19
#12DEC87	17:24	3.26		-14.53	5.33	8.00	-21.81	386	268	16.56	1.99	-0.01	8.13
#12DEC87	17:28	3.46		-12.69	4.92	7.91	-21.06	383	280	5.88	0.70	-0.01	8.09
#12DEC87	17:32	3.50	-8.25	-13.06	4.81	8.66	-21.56	379	287	13.59	1.63	-0.01	8.06
#12DEC87	17:36	3.38		-14.16	5.27	8.31	-22.06	380	280	9.72	1.17	-0.01	8.00
#12DEC87	17:40	3.25		-13.69	5.86	8.00	-22.25	382	273	8.78	1.05	-0.01	7.97
#12DEC87	17:44	3.51		-13.31	5.08	8.84	-22.38	386	282	1.00	0.12	-0.01	7.94
#12DEC87	17:48	3.40		-14.44	5.14	8.56	-22.06	386	284	15.59	1.87	-0.01	7.91
#12DEC87	17:52	3.31		-13.19	5.56	7.91	-21.94	384	274	4.92	0.59	-0.01	7.91
#12DEC87	17:56	3.39		-13.88	5.25	8.50	-22.19	384	276	3.01	0.36	-0.01	7.91
#12DEC87	18:00	3.53		-13.59	4.88	8.13	-21.19	383	283	5.78	0.69	-0.01	7.86
#12DEC87	18:04	3.42		-13.38	5.28	8.03	-21.75	382	280	3.08	0.37	-0.01	7.95
#12DEC87	18:08	3.54		-13.72	5.02	8.69	-22.19	385	276	6.58	0.78	-0.01	7.92
#12DEC87	18:12	3.45		-13.91	5.00	8.25	-21.63	386	279	9.78	1.18	-0.01	7.91
12DEC87	18:16	3.32		-13.13	5.34	7.77	-21.44	386	281	2.70	0.33	-0.01	7.91
12DEC87	18:20	3.35		-13.09	4.94	8.50	-21.75	387	279	2.57	0.31	-0.01	8.47
12DEC87	18:24	3.48		-13.94	4.98	8.47	-21.56	385	274	6.52	0.79	-0.01	8.53
12DEC87	18:28	3.21		-14.81	6.53	8.38	-23.38	387	281	0.21	0.02	-0.01	8.56
12DEC87	18:32	2.91		-15.47	6.88	9.34	-24.69	390	286	0.36	0.03	-0.01	8.63
#12DEC87	18:36	2.18			7.38	9.66	-25.50	392	280	1.30	0.14	-0.01	0.10
#12DEC87	18:40	2.41			7.23	8.88	-24.56	386	288	8.98	0.86	-0.01	0.12
#12DEC87	18:44	2.56		-14.69	6.66	9.09	-24.25	377	277	-0.90	-0.06	-0.01	0.11
#12DEC87	18:48	2.91		-15.16	6.06	8.78	-23.31	366	264	0.26	0.02	-0.01	0.14
#12DEC87	18:52	3.01		-14.13	6.48	7.89	-22.88	360	279	12.09	0.91	-0.01	0.14
#12DEC87	18:56	3.09		-13.97	5.89	9.00	-23.38	355	293	5.48	0.00	-0.01	0.15
#12DEC87	19:00	3.39		-14.44	5.19	8.50	-22.19	352	273	2.58	0.00	-0.01	0.16
#12DEC87	19:04	3.38		-13.00	5.19	7.11	-20.69	351	264	13.03	0.00	-0.01	0.19
#12DEC87	19:08	3.29	-7.81	-12.41	4.56	7.61	-19.88	350	289	12.66	0.00	-0.01	0.17
#12DEC87	19:12	3.38	-8.09	-12.75	4.61	7.69	-20.25	351	292	11.22	0.00	-0.01	0.18
#12DEC87	19:16	3.38		-12.69	5.11	6.89	-20.38	356	267	16.25	0.00	-0.01	0.19
#12DEC87	19:20	3.35	-7.92	-12.53	4.63	7.69	-20.19	361	273	5.27	0.00	-0.01	0.19
#12DEC87	19:24	3.00	-7.20	-11.09	4.16	7.27	-19.00	364	296	6.69	0.38	-0.01	0.18
#12DEC87	19:28	2.50	-6.27	-9.69	3.43	5.36	-15.06	363	276	11.03	0.66	-0.01	0.18

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DST CLTR GAS DF P IN H2O	ABSR IN GAS P IN H2O	ABSR OUT GAS P IN H2O	ABSR GAS DIFF P IN H2O	BGHSE DIFF P IN H2O	ID FAN SUCT P IN H2O	ABSR IN GAS T DEG F	ABSR OUT GAS T DEG F	OUTLET GAS SO2 PPMV	CORRTD GAS SO2 %	OUTLET GAS NOX PPMV	LIME SLRY FEED GPM
#12DEC87	19:32	2.50	-6.44	-10.03	3.52	5.08	-14.84	359	257	0.94	0.03	-0.01	0.20
#12DEC87	19:36	2.44	-6.08	-9.59	3.45	5.14	-14.66	353	284	0.65	0.02	-0.01	0.21
	AVERAGE	3.37	-7.39	-13.42	5.17	8.22	-21.66	384	279	5.48	0.66	-0.01	7.80

= NON-TEST PERIOD, VALUE NOT INCLUDED IN AVERAGE

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DILUTION WATER GPM	ST IN STM PRESS PSIG	DILUTION WATER GPM	BHSE OUT GAS T DEG F	BGHSE DIFF P IN H2O	STACK CO PPMV	STACK OPACITY %	STACK CO2 %	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS
		FI3200	PI200A	FI3200	TI3800	DPI3809	AI370A	AI370B	AI370C	IIL320	IIH320	IIL320	IIL320
*12DEC87	11:10	1.48	-2	1.48	266	8.41	91.25	44.25	3.69	0.01	100.25	0.01	0.01
*12DEC87	11:14	4.64	-6	4.64	272	7.52	74.00	44.88	2.99	0.01	102.50	0.01	0.01
*12DEC87	11:18	8.86	-5	8.88	271	8.50	81.75	44.00	2.98	0.01	103.00	0.01	0.01
12DEC87	11:22	4.33	-6	4.33	264	8.81	88.25	46.63	3.29	0.01	104.00	0.01	0.01
12DEC87	11:26	1.93	-7	1.93	266	7.66	81.25	43.38	3.09	0.01	102.75	0.01	0.01
12DEC87	11:30	5.55	-2	5.55	272	8.34	71.25	46.38	2.98	0.01	101.00	0.01	0.01
12DEC87	11:34	7.64	-7	7.64	269	8.31	70.50	44.00	2.98	0.01	103.75	0.01	0.01
12DEC87	11:38	3.66	-8	3.66	264	7.72	66.25	41.88	3.09	0.01	106.25	0.01	0.01
*12DEC87	11:42	2.80	-3	2.80	269	9.13	98.50	41.13	1.98	0.01	105.75	0.01	0.01
*12DEC87	11:46	7.67	-8	7.67	273	9.09	75.50	44.50	2.69	0.01	106.00	0.01	0.01
*12DEC87	11:50	6.86	-8	6.86	267	7.67	68.50	41.38	2.78	0.01	105.75	0.01	0.01
*12DEC87	11:54	2.67	-8	2.67	265	8.97	67.25	45.88	2.78	0.01	106.75	0.01	0.01
*12DEC87	11:58	4.52	-7	4.52	271	9.22	62.75	49.88	2.98	0.01	105.25	0.01	0.01
12DEC87	12:02	8.59	-8	8.59	272	8.06	66.75	44.75	3.39	0.01	106.00	0.01	0.01
12DEC87	12:06	5.88	-8	5.88	265	8.91	72.25	47.00	3.48	0.01	106.00	0.01	0.01
12DEC87	12:10	3.15	-8	3.15	266	8.75	67.75	40.13	3.09	0.01	105.25	0.01	0.01
12DEC87	12:14	5.31	-8	5.31	270	7.77	62.88	46.13	2.99	0.01	104.00	0.01	0.01
12DEC87	12:18	6.89	-8	6.89	269	8.47	66.25	46.38	3.18	0.01	102.50	0.01	0.01
12DEC87	12:22	3.98		3.98	265	8.53	59.00	41.13	3.18	0.01	102.75	0.01	0.01
12DEC87	12:26	2.57		2.57	267	7.48	53.38	45.63	2.78	0.01	101.25	0.01	0.01
12DEC87	12:30	5.55		5.55	270	8.16	65.00	40.50	3.48	0.01	102.00	0.01	0.01
12DEC87	12:34	6.19		6.19	268	8.53	61.25	49.88	3.48	0.01	102.75	0.01	0.01
12DEC87	12:38	4.08		4.08	266	7.75	65.25	47.25	3.29	0.01	103.00	0.01	0.01
12DEC87	12:42	4.13		4.13	268	7.91	57.88	47.75	2.59	0.01	100.00	0.01	0.01
12DEC87	12:46	4.97		4.97	268	8.25	56.63	41.00	2.89	0.01	102.00	0.01	0.01
12DEC87	12:50	4.86		4.86	268	7.77	57.25	43.13	2.87	0.01	100.75	0.01	0.01
12DEC87	12:54	4.78		4.78	268	8.25	56.75	42.50	2.89	0.01	101.75	0.01	0.01
12DEC87	12:58	4.06		4.06	268	7.81	57.50	43.50	3.09	0.01	102.25	0.01	0.01
*12DEC87	13:02	4.66		4.66	269	8.16	66.50	48.63	3.29	0.01	101.50	0.01	0.01
*12DEC87	13:06	5.17		5.17	269	8.44	64.25	49.25	3.29	0.01	102.00	0.01	0.01
*12DEC87	13:10	5.03		5.03	268	7.72	57.38	49.88	3.09	0.01	102.25	0.01	0.01
*12DEC87	13:14	4.72		4.72	268	7.83	52.50	49.75	2.98	0.01	101.00	0.01	0.01
*12DEC87	13:18	4.56		4.56	268	8.50	57.38	49.88	2.98	0.01	101.00	0.01	0.01
*12DEC87	13:22	4.19		4.19	268	7.94	59.25	49.88	3.18	0.01	101.75	0.01	0.01
12DEC87	13:26	5.08		5.08	269	7.88	61.13	49.88	3.58	0.01	102.75	0.01	0.01
12DEC87	13:30	5.72		5.72	269	8.31	61.50	49.88	3.39	0.01	101.50	0.01	0.01
12DEC87	13:34	4.83		4.83	267	8.00	62.50	49.88	2.99	0.01	101.00	0.01	0.01
12DEC87	13:38	3.09		3.09	266	7.86	59.00	48.75	2.98	0.01	101.00	0.01	0.01
12DEC87	13:42	4.39		4.39	269	8.50	57.25	49.88	3.18	0.01	101.75	0.01	0.01
12DEC87	13:46	6.08		6.08	270	8.19	54.38	49.88	3.18	0.01	103.50	0.01	0.01
12DEC87	13:50	5.25		5.25	267	7.67	57.25	49.88	2.89	0.01	102.25	0.01	0.01

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DILUTION WATER GPM	ST IN STM PRESS PSIG	DILUTION WATER GPM	BHSE OUT GAS T DEG F	BGHSE DIFF P IN H2O	STACK CO PPMV	STACK OPACITY %	STACK CO2 %	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS
12DEC87	13:54	2.92		2.92	266	8.56	55.38	49.88	2.73	0.01	101.00	0.01	0.01
12DEC87	13:58	3.59		3.59	269	8.31	56.38	49.88	3.39	0.01	102.00	0.01	0.01
12DEC87	14:02	5.97		5.97	270	7.61	51.50	49.88	2.89	0.01	102.25	0.01	0.01
12DEC87	14:06	5.05		5.05	267	8.22	59.38	49.88	2.98	0.01	101.50	0.01	0.01
12DEC87	14:10	2.91		2.91	267	8.44	64.25	49.88	3.18	0.01	102.25	0.01	0.01
12DEC87	14:14	4.66		4.66	270	7.83	64.25	49.88	3.29	0.01	101.75	0.01	0.01
12DEC87	14:18	6.44		6.44	270	8.47	57.75	49.88	3.09	0.01	102.00	0.01	0.01
12DEC87	14:22	4.80		4.80	266	8.09	59.25	49.88	2.78	0.01	101.50	0.01	0.01
12DEC87	14:26	3.24		3.24	268	7.64	76.25	49.88	3.88	0.01	102.75	0.01	0.01
12DEC87	14:30	5.94		5.94	271	8.75	69.25	49.88	3.79	0.01	102.75	0.01	0.01
12DEC87	14:34	7.14		7.14	269	8.63	78.25	49.88	4.08	0.01	103.50	0.01	0.01
12DEC87	14:38	4.89		4.89	266	7.53	77.25	49.88	3.98	0.01	104.25	0.01	0.01
12DEC87	14:42	4.80		4.80	269	8.41	72.50	49.88	3.69	0.01	102.50	0.01	0.01
*12DEC87	14:46	6.34		6.34	270	8.66	65.25	49.88	2.98	0.01	102.50	0.01	0.01
*12DEC87	14:50	5.41		5.41	268	7.61	69.25	49.88	3.48	0.01	103.25	0.01	0.01
*12DEC87	14:54	4.41		4.41	268	8.56	71.50	49.88	3.69	0.01	102.50	0.01	0.01
*12DEC87	14:58	5.58		5.58	270	8.47	64.25	49.88	3.48	0.01	103.00	0.01	0.01
*12DEC87	15:02	6.42		6.42	269	7.36	63.38	49.88	2.89	0.01	102.50	0.01	0.01
*12DEC87	15:06	4.22		4.22	266	8.50	60.50	49.88	2.89	0.01	102.00	0.01	0.01
12DEC87	15:10	3.01		3.01	268	8.56	54.38	49.88	3.18	0.01	101.75	0.01	0.01
12DEC87	15:14	5.77		5.77	270	7.39	57.25	49.88	2.89	0.01	102.50	0.01	0.01
12DEC87	15:18	5.83		5.83	268	8.22	62.50	49.88	3.09	0.01	101.50	0.01	0.01
12DEC87	15:22	3.66		3.66	267	8.88	63.38	49.88	3.29	0.01	103.75	0.01	0.01
*12DEC87	15:26	4.64		4.64	270	7.92	100.00	49.88	1.98	0.01	105.25	0.01	0.01
*12DEC87	15:30	8.66		8.66	272	8.00	42.50	49.88	0.20	0.01	101.25	0.01	0.01
*12DEC87	15:34	7.64		7.64	264	6.34	20.56	49.88	0.10	0.01	95.50	0.01	0.01
*12DEC87	15:38	-0.47		-0.47	259	4.61	11.59	49.88	0.10	0.01	90.25	0.01	0.01
*12DEC87	15:42	-1.03		-1.03	263	4.22	7.72	49.88	0.10	0.01	88.50	0.01	0.01
*12DEC87	15:46	1.97		1.97	269	4.95	1.62	49.88	0.10	0.01	92.25	0.01	0.01
*12DEC87	15:50	6.00		6.00	269	4.70	2.55	49.88	0.00	0.01	91.25	0.01	0.01
*12DEC87	15:54	2.11		2.11	262	4.30	0.69	49.88	0.10	0.01	89.50	0.01	0.01
*12DEC87	15:58	-1.02		-1.02	260	4.39	3.56	49.88	0.10	0.01	89.50	0.01	0.01
*12DEC87	16:02	-1.01		-1.01	264	4.72	3.56	49.88	0.20	0.01	90.75	0.01	0.01
*12DEC87	16:06	1.47		1.47	268	4.86	4.58	49.88	0.40	0.01	91.00	0.01	0.01
*12DEC87	16:10	5.02		5.02	270	4.92	6.53	49.88	0.59	0.01	91.25	0.01	0.01
*12DEC87	16:14	5.72		5.72	266	4.83	12.53	49.88	0.69	0.01	91.25	0.01	0.01
*12DEC87	16:18	2.19		2.19	263	6.03	27.44	49.88	0.69	0.01	94.75	0.01	0.01
*12DEC87	16:22	4.50		4.50	268	6.84	58.38	49.88	0.99	0.01	94.50	0.01	0.01
*12DEC87	16:26	9.38		9.38	270	6.59	59.25	-0.04	1.39	0.01	95.50	0.01	0.01
*12DEC87	16:30	7.06		7.06	264	5.03	192.00	-0.04	0.89	0.01	90.50	0.01	0.01
*12DEC87	16:34	1.97		1.97	262	5.91	159.00	-0.04	0.59	0.01	90.50	0.01	0.01
*12DEC87	16:38	6.42		6.42	269	5.09	147.00	-0.04	0.49	0.01	90.00	0.01	0.01

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DILUTION WATER GPM	ST IN STM PRESS PSIG	DILUTION WATER GPM	BHSE OUT GAS T DEG F	BGHSE DIFF P IN H2O	STACK CO PPMV	STACK OPACITY %	STACK CO2 %	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS
*12DEC87	16:42	10.53		10.53	268	4.80	222.00	-0.04	0.89	0.01	90.25	0.01	0.01
*12DEC87	16:46	1.53		1.53	256	4.92	136.50	-0.04	0.99	0.01	90.50	0.01	0.01
*12DEC87	16:50	-1.02		-1.02	258	7.44	189.00	-0.04	1.39	0.01	94.75	0.01	0.01
*12DEC87	16:54	-1.02		-1.02	262	6.97	224.00	-0.04	1.59	0.01	96.50	0.01	0.01
*12DEC87	16:58	-1.02		-1.02	263	6.95	129.00	-0.04	1.89	0.01	95.00	0.01	0.01
*12DEC87	17:02	-1.01		-1.01	265	7.56	68.25	-0.04	2.38	0.01	96.75	0.01	0.01
*12DEC87	17:06	-1.01		-1.01	267	7.30	58.38	-0.04	2.88	0.01	98.00	0.01	0.01
*12DEC87	17:10	-1.02		-1.02	269	8.06	57.38	-0.04	2.98	0.01	100.00	0.01	0.01
*12DEC87	17:14	2.27		2.27	272	8.88	79.25	-0.04	4.38	0.01	102.50	0.01	0.01
*12DEC87	17:18	7.70		7.70	273	8.22	76.25	-0.04	4.38	0.01	104.25	0.01	0.01
*12DEC87	17:22	6.52		6.52	266	8.00	71.50	-0.04	3.88	0.01	104.25	0.01	0.01
*12DEC87	17:26	1.98		1.98	264	8.50	62.38	-0.04	3.08	0.01	101.50	0.01	0.01
*12DEC87	17:30	2.07		2.07	268	8.22	54.50	-0.04	2.68	0.01	102.25	0.01	0.01
*12DEC87	17:34	5.75		5.75	271	8.03	61.38	-0.04	3.38	0.01	102.50	0.01	0.01
*12DEC87	17:38	6.06		6.06	267	8.56	61.38	-0.04	3.38	0.01	104.25	0.01	0.01
*12DEC87	17:42	3.63		3.63	266	8.28	60.38	-0.04	3.48	0.01	103.75	0.01	0.01
*12DEC87	17:46	4.86		4.86	270	8.16	58.25	-0.04	3.29	0.01	104.00	0.01	0.01
*12DEC87	17:50	6.77		6.77	270	8.69	59.38	-0.04	2.88	0.01	103.25	0.01	0.01
*12DEC87	17:54	4.72		4.72	266	8.44	61.38	-0.04	3.08	0.01	104.25	0.01	0.01
*12DEC87	17:58	3.24		3.24	268	7.73	57.25	-0.05	3.08	0.01	103.00	0.01	0.01
*12DEC87	18:02	5.30		5.30	270	8.69	81.25	-0.04	3.29	0.01	102.75	0.01	0.01
*12DEC87	18:06	5.84		5.84	269	8.50	60.88	-0.04	3.38	0.01	104.25	0.01	0.01
*12DEC87	18:10	4.84		4.84	268	7.89	59.00	-0.04	3.28	0.01	102.75	0.01	0.01
*12DEC87	18:14	4.78		4.78	269	8.31	60.38	-0.04	3.38	0.01	101.75	0.01	0.01
12DEC87	18:18	5.58		5.58	270	8.22	67.75	-0.04	3.78	0.01	102.75	0.01	0.01
12DEC87	18:22	5.34		5.34	268	7.73	75.50	-0.04	3.58	0.01	101.75	0.01	0.01
12DEC87	18:26	3.54		3.54	267	8.78	64.75	-0.04	3.58	0.01	103.75	0.01	0.01
12DEC87	18:30	4.58		4.58	270	9.19	72.00	-0.04	3.18	0.01	107.50	0.01	0.01
12DEC87	18:34	7.53		7.53	272	8.72	61.38	-0.04	3.58	0.01	110.25	0.01	0.01
*12DEC87	18:38	8.50		8.50	271	9.69	84.25	-0.04	1.79	0.01	108.75	0.01	0.01
*12DEC87	18:42	11.56		11.56	273	9.41	93.50	-0.04	1.69	0.01	108.75	0.01	0.01
*12DEC87	18:46	11.31		11.31	267	7.94	137.00	-0.04	1.09	0.01	108.50	0.01	0.01
*12DEC87	18:50	5.14		5.14	262	8.69	89.25	-0.04	0.68	0.01	107.25	0.01	0.01
*12DEC87	18:54	5.25		5.25	270	9.13	57.00	-0.04	0.59	0.01	108.25	0.01	0.01
*12DEC87	18:58	10.75		10.75	273	7.72	27.00	-0.04	0.59	0.01	107.25	0.01	0.01
*12DEC87	19:02	8.38		8.38	264	8.16	18.63	-0.04	0.59	0.01	105.00	0.01	0.01
*12DEC87	19:06	2.09		2.09	263	7.88	12.53	-0.04	0.49	0.01	101.50	0.01	0.01
*12DEC87	19:10	6.30		6.30	272	6.77	9.66	-0.04	0.59	0.01	100.50	0.01	0.01
*12DEC87	19:14	11.59		11.59	271	7.69	11.69	-0.04	0.69	0.01	101.50	0.01	0.01
*12DEC87	19:18	6.39		6.39	262	7.94	8.91	-0.04	0.59	0.01	102.75	0.01	0.01
*12DEC87	19:22	3.88		3.88	267	6.73	11.34	-0.04	0.59	0.01	100.50	0.01	0.01
*12DEC87	19:26	10.69		10.69	273	6.30	12.38	-0.04	0.59	0.01	94.75	0.01	0.01

PROCESS DATA SUMMARY
MAINE ENERGY RECOVERY COMPANY
YORK COUNTY WASTE-TO-ENERGY FACILITY
BIDDEFORD MAINE

UNIT A

DATE	TIME	DILUTION WATER GPM	ST IN STM PRESS PSIG	DILUTION WATER GPM	BHSE OUT GAS T DEG F	BGHSE DIFF P IN H2O	STACK CO PPMV	STACK OPACITY %	STACK CO2 %	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS	ID FAN CURRENT AMPS
*12DEC87	19:30	9.44		9.44	265	5.89	12.53	-0.04	0.60	0.01	94.00	0.01	0.01
*12DEC87	19:34	1.56		1.56	259	5.00	11.34	2.96	0.59	0.01	93.25	0.01	0.01
	AVERAGE	4.89	-7	4.89	268	8.20	64.02	42.54	3.23	0.01	102.84	0.01	0.01

* = NON-TEST PERIOD,VALUE NOT INCLUDED IN AVERAGE

APPENDIX C

SEMIVOLATILE ORGANICS (DIOXIN/FURAN) MM5 FIELD DATA

C.1 Run No. 1 Spray Dryer Inlet C-2
C.2 Run No. 1 Baghouse Outlet C-13
C.3 Run No. 2 Spray Dryer Inlet C-24
C.4 Run No. 2 Baghouse Outlet C-36
C.5 Run No. 3 Spray Dryer Inlet C-48
C.6 Run No. 3 Baghouse Outlet C-60
C.7 Proof/Blank Train Set-up/Recovery C-75

C.1 Run No. 1 Spray Dryer Inlet

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FILE NAME - RISVIN                                            PROG.=VER 01/13/88 V2
RUN # - 1                                                     01-15-1988  16:56:55
LOCATION - MERC-INLET SEMIVOLATILES
DATE - 'DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=              359.610
Final Meter Volume (Cubic Feet)=                428.920
Meter Factor=                                     1.023
Multiple leak checks, see end of printout                   Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                   70.904
Gas Volume (Dry Standard Cubic Feet)=            66.781

Barometric Pressure (in Hg)=                      29.85
Static Pressure (Inches H20)=                     -8.00

Percent Oxygen=                                     8.6
Percent Carbon Dioxide=                            10.9
Moisture Collected (ml)=                          237.2
Percent Water=                                     14.3

Average Meter Temperature (F)=                      100
Average Delta H (in H20)=                          0.57
Average Delta P (in H20)=                         1.023
Average Stack Temperature (F)=                      371

Dry Molecular Weight=                             30.09
Wet Molecular Weight=                             28.36

Average Square Root of Delta P (in H20)=         1.0090
% Isokinetic=                                      99.2

Pitot Coefficient=                                 0.84
Sampling Time (Minutes)=                          160.0
Nozzle Diameter (Inches)=                         0.183
Stack Axis #1 (Inches)=                            50.0
Stack Axis #2 (Inches)=                            47.9
Rectangular Stack
Stack Area (Square Feet)=                         16.62

Stack Velocity  (Actual, Feet/min)=               4,330
Flow Rate (Actual, Cubic ft/min)=                71,978
Flow rate (Standard, Wet, Cubic ft/min)=         44,717
Flow Rate (Standard, Dry, Cubic ft/min)=         38,308

Particulate Loading - Front Half

Particulate Weight (g)=                          0.0000    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=          0.0000         0.0000     0.0000
Particulate Loading, Actual (gr/cu ft)=          0.0000
Emission Rate (lb/hr)=                             0.00

No Back Half Analysis
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                        * * METRIC UNITS * *
FILE NAME - R1SVIN                                          PROG.=VER 01/13/88 V2
RUN # - 1                                                   01-15-1988  16:57:22
LOCATION - MERC-INLET SEMIVOLATILES
DATE - 'DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=          10.183
Final Meter Volume (Cubic Meters)=            12.145
Meter Factor=                                  1.023
Multiple leak checks, see end of printout              Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=               2.008
Gas Volume (Dry Standard Cubic Meters)=        1.891

Barometric Pressure (mm Hg)=                     758
Static Pressure (mm H2O)=                       -203

Percent Oxygen=                                  8.6
Percent Carbon Dioxide=                         10.9
Moisture Collected (ml)=                       237.2
Percent Water=                                  14.3

Average Meter Temperature (C)=                    38
Average Delta H (mm H2O)=                       14.6
Average Delta P (mm H2O)=                       26.0
Average Stack Temperature (C)=                   188

Dry Molecular Weight=                          30.09
Wet Molecular Weight=                          28.36

Average Square Root of Delta P (mm H2O)=      5.0851
% Isokinetic=                                   99.2

Pitot Coefficient=                              0.84
Sampling Time (Minutes)=                       160.0
Nozzle Diameter (mm)=                           4.65
Stack Axis #1 (Meters)=                        1.270
Stack Axis #2 (Meters)=                        1.216
Rectangular Stack
Stack Area (Square Meters)=                    1.544

Stack Velocity  (Actual, m/min)=               1,320
Flow rate (Actual, Cubic m/min)=               2,038
Flow rate (Standard, Wet, Cubic m/min)=        1,266
Flow rate (Standard, Dry, Cubic m/min)=        1,085

Particulate Loading - Front Half

Particulate Weight (g)=                       0.0000   Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=         0.0             0.0        0.0
Particulate Loading, Actual (mg/cu m)=           0.0
Emission Rate (kg/hr)=                          0.00

No Back Half Analysis
```

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FILE NAME - R1SVIN                                              PROG.=VER 01/13/88 V2
RUN # - 1                                                       01-15-1988  16:57:49
LOCATION - MERC-INLET SEMIVOLATILES
DATE - 'DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Point #      Delta P    Delta H    Stack T       Meter T
            (in. H2O)  (in. H2O)     (F)      In(F)   Out(F)
 1           1.400       0.58        380        79       78
 2           1.200       0.66        380        82       80
 3           1.200       0.67        373        86       80
 4           1.300       0.75        373        89       80
 5           1.200       0.70        375        95       83
 6           1.200       0.72        373        99       85
 7           1.200       0.72        376       102       88
 8           1.200       0.74        377       104       90
 9           1.100       0.68        373       106       92
 10          1.100       0.66        375       108       93
 11          1.000       0.58        375       110       94
 12          0.950       0.56        374       110       96
 13          0.870       0.50        374       111       97
 14          0.950       0.53        369       112       98
 15          1.000       0.56        371       112      100
 16          0.950       0.54        361       112      100
 17          0.840       0.47        353        98       98
 18          0.850       0.47        370        99       98
 19          0.850       0.47        367       102       97
 20          0.910       0.50        368       104       98
 21          0.880       0.49        370       107       98
 22          0.880       0.46        371       108       98
 23          0.880       0.46        370       110       99
 24          0.920       0.50        376       110      100
 25          0.850       0.50        375       112      100
 26          0.950       0.50        370       112      100
 27          0.950       0.53        369       113      101
 28          1.000       0.56        370       113      101
 29          1.100       0.61        368       114      102
 30          1.200       0.66        374       114      102
 31          0.970       0.55        369       114      102
 32          0.900       0.51        359       114      102


Fraction                   Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                              (g)        (g)        (g)       (g)
DRY CATCH                  0.0000     0.0000     0.0000     0.0000
FILTER                     0.0000     0.0000     0.0000     0.0000

Fraction                   Final Wt.  Tare Wt.    Vol.      Net Wt.
                              (g)        (g)       (ml)       (g)
PROBE RINSE                0.0000     0.0000      0.0     0.0000
IMPINGERS                  0.0000     0.0000      0.0     0.0000
Probe Rinse Blank (mg/ml)=  0.0000
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
    0.0010    80.0000
    0.0010    80.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 1

Project Number 8910-L-02-12

Date Dec 9, 1987

Plant MERC

Sampling Location Inlet Semivols Train #5

FIELD CREW

Crew Chief Jim Surman

Testing Engineer Scott Klamm

Assistant Testing Engineer Steve Cummins
Schliesser

Process Engineer

Other Laura Kinner lab

V17

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC
Sampling Location Inlet Semivol
Run No. 1

Date Dec. 9 1987
Operator S. Klemm

Train No. 5

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice, in. H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	% H_2O	
Barometric Pressure Corrected to Sampling Elevation − 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm − (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	$P_s\ P_m$	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head, in. H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in.		
Actual Nozzle Diameter, in.		
Reference, Δp, in. H_2O		

Isokinetic sampling equation:

Where: $Vm_i = (K)(Tm - 460)\sqrt{\frac{\Delta P_s}{Ts - 460}}$

$K = \frac{5.168\,(Cp)(\theta i)(Mf)(Dn^2)}{PB}$

Vm_i = Volume of the Meter per Sampling Interval, ft^3
K = Constant of Fixed and Assumed Parameters, Dimensionless
ΔPs = Velocity Head of S Pitot, in. H_2O
Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	θi	
Mole Fraction Dry Gas − (100 − % H_2O) 100	Mf	
Nozzle Diameter, in.	Dn	
5.168 (____)(____)(____)(____^{2})	K	

COMPUTER PRINTOUT

```
%
M [illegible]
DELTA H CAL=1.[illegible]
B P=29.85
STATIC P=-9.2
CP=0.836
MIN/PNT=5.
AVG STK T=360.
AVG DELTA P=1.1
% O2=7.
% CO2=13.
M TEMP=85.
M RATE,CFM=0.75
CALC NZL D=  0.2392
NZL D= 0.1830
DRY MW=    30.36
WET MW=    28.50
DELTA H= 0.608
```

12-9-87
Inlet
semivols

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page.

V13

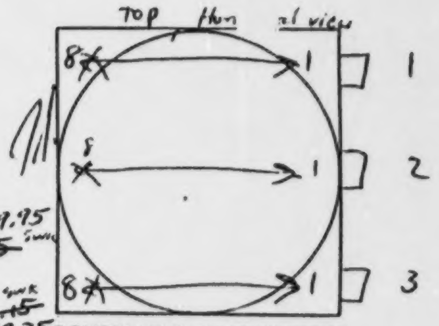
FIELD ATA

RUN NO. 1
PROJECT NO. 8910-L-02-12
PLANT MERC
DATE Dec 9 1987
SAMPLING LOCATION Inlet
SAMPLE TYPE MM5 - semivols
OPERATOR S. Klemm
FILTER NO. —
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP Uil-8

Train No.5

PROBE NO. UL-2
PROBE LENGTH AND TYPE Heat Glass
SAMPLE BOX NO. 10284
METER BOX NO. 9
TEMP. CONTROLLER NO. X-9030
TEMP. METER NO. 9518
THERMOCOUPLE I.D. NO. 96-1
UMBILICAL CORD I.D. NO. U25-6
UMBILICAL CORD I.D. NO.
NOZZLE NO. N-2

NOZZLE DIA. 0.183
ASSUMED MOISTURE % 15
METER ΔH @ 1.699
METER CORRECTION 1.023
PITOT NO. S-3
PITOT COEFFICIENT 0.836
BAROMETRIC PRESSURE ~~29.80~~ SWK ~~30.25~~ 29.95 SWK
SITE TO BARO. ELEVATION (ft.) - 100'
CORRECTED B.P. (0.1 in./100 ft.) ~~29.40~~ SWK ~~30.15~~ SWK 29.85
STATIC PRESSURE ~~-9.20~~ -8.0"



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK ≥ 3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr) ~~1100~~ SWK 1150		1850				
PASS/FAIL PASS		PASS				

PITOT LEAK CHECK ≥ 3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr) 1150 SWK						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

(PORT 2) (PORT 3)

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	11.20	1700	1710	1850	
VACUUM, in. Hg	≥15"	5"	≥15"	7"	≥15"
CFM	.003	.001	.005	.001	
VOLUMES					
FINAL					
INITIAL		~~359.57~~ SWK 395.57		395.61	
DIFFERENCE		395.61		395.88	

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)					
VACUUM, in. Hg		≥15"		≥15"	
CFM					
VOLUMES					
FINAL	429.14				
INITIAL	429.14				
DIFFERENCE					

INITIAL VOLUME 359.61
FINAL VOLUME 429.14
LEAK CHECK VOLUME 0.22
ADJUSTED FINAL VOLUME 428.92

V14

COMMENTS

Revision 11/18/86

RUN NO. 1 Train #5
DATE Dec 9, 1987
SAMPLING LOCATION Inlet
PROJECT NO. 8710-L-02-12
p. 1 of 2
OPERATOR S. Klemm

	TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr.)		GAS METER READING (V_m), ft³ INITIAL 359.61 ~~337.63~~ 359.73		VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O		STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD °F	Flex line °F
		1535	0 ø	DESIRED	ACTUAL		DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F							
PORT 2	8	1540	5	362.35	361.74	1.4	.58	.58	380	79	78	4	47	250	250	254	44	220
	8	1545	10	364.59	364.02	1.2	.64	.66	380	82	80	4	45	250	251	258	45	220
	7	1550	15	~~367.27~~ 366.84	366.19	1.2	.65	.67	373	86	80	4	46	224	227	251	39	222
	7	1555	20	369.22	368.58	1.3	.70	.75	373	87	80	5	47	233	225	253	39	220
	6	1600	25	371.51	370.76	1.2	.65	.70	375	95	83	5	49	233	227	253	40	220
	6	1605	30	373.81	373.32	1.2	.66	.72	373	99	85	5	49	232	224	254	41	252
	5	1610	35	376.12	375.68	1.2	.66	.72	376	102	88	5	51	234	228	256	43	240
	5	1615	40	378.44	378.08	1.2	.66	.74	377	104	90	5	52	233	225	258	42	247
	4	1620	45	380.67	380.43	1.1	.61	.68	373	106	92	5	53	223	225	254	40	246
	4	1625	50	382.91	382.83	1.1	.61	.66	375	108	93	5	53	223	223	252	37	253
	3	1630	55	385.05	384.93	1.0	.55	.58	375	110	94	5	52	222	224	251	38	253
	3	1635	60	387.13	387.09	0.95	.53	.56	374	110	96	5	51	222	222	251	38	249
	2	1640	65	389.14	389.17	0.87	.48	.50	374	111	97	5	51	221	224	250	39	249
	2	1645	70	391.24	391.27	0.95	.53	.53	369	112	98	5	51	222	222	248	42	253
	1	1650	75	393.40	393.41	1.0	.56	.56	371	112	100	5	51	221	224	248	39	248
	1	1655	80	395.51	395.67	0.95	.54	.54	361	112	100	5	51	221	221	248	40	248
PORT 3	~~8~~																	
	~~8~~	1723	0	395.79		~~.84~~	~~.47~~	~~.60~~	353	~~98~~	~~98~~	~~sw~~						
	8	1728	5	397.76	397.75	.84	.47	.47	353	98	98	5	53	227	222	241	45	252
	8	1733	10	399.73	399.75	.85	.47	.47	370	99	98	5	53	227	220	243	41	249
	7	1738	15	401.70	401.75	.85	.47	.47	367	102	97	5	54	228	217	244	41	251
	7	1743	20	403.74	403.73	.91	.51	.50	368	104	93	5	50	228	219	245	38	247
	6	1748	25	405.75	405.82	.88	.49	.49	370	107	98	5	48	227	218	244	38	248
	6	1753	30	407.77	407.81	.88	.49	.46	371	108	98	5	47	236	221	247	37	249
	5	1758	35	409.79	409.79	.88	.47	.46	370	110	99	5	47	235	217	248	38	250
	5	1803	40	411.85	411.87	.92	.51	.50	376	110	100	6	47	235	218	248	39	247
	4	1808	45	413.83	413.93	.85	.47	.50	375	112	100	6	48	234	217	248	38	248
	4	1813	50	415.94	416.00	.95	.53	.50	370	112	100	6	48	234	217	245	39	245

COMMENTS

V15

RUN NO. 1 Train No. 5
DATE Dec 9, 1987
SAMPLING LOCATION Inlet
PROJECT NO. 8910-L-02-12
p. 2 of 2
OPERATOR S. Klamm

	TRAVERSE POINT NUMBER	CLOCK TIME (24-hr.)	SAMPLING TIME, min	GAS METER READING (V_m), ft³ INITIAL DESIRED	GAS METER READING ACTUAL	VELOCITY HEAD (Δp_s), in. H₂O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H₂O DESIRED	ORIFICE PRESSURE DIFFERENTIAL ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET (T_m in), °F	DRY GAS METER TEMPERATURE OUTLET (T_m out), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD °F	Flex line °F
Port 3 -	3	1818	55	418.04	418.09	0.95	.54	.53	369	113	101	6	49	233	218	249	40	247
	3	1823	60	420.21	420.27	1.0	.56	.56	370	113	101	6	48	232	214	249	37	251
	2	1828	65	422.48	422.51	1.1	.62	.61	368	114	102	6	47	232	213	250	37	250
	2	1833	70	424.85	424.81	1.2	.67	.66	374	114	102	7	46	231	213	250	38	247
	1	1838	75	426.99	427.01	0.97	.55	.55	369	114	102	7	46	232	215	251	39	243
	1	1843	80	429.06	429.14	0.90	.51	.51	359	114	102	7	46	232	212	252	38	243
Port 1			0															
	8		5															
	8		10															

COMMENTS

V16

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. 1

Sampling Location: Unit A, SMV Outlet

Sampling Train No. V

Sample Box No. 10284

Sample Box Set Up Date/Person: 12-7/87 Kinner

Sample Box Leak Check: 0.005 cfm @ 15 in. Hg vacuum

Train to be used for: [✓ Source Sample] Pre-Run Proof Blank Post-Run Proof Blank Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N-2		
Probe	5		
♀ Probe Blank-off	5		
♂ Glass Union Blank-off	5		
Glass Union	5		
Sample Transfer Line	5		
♀ S-T Line Blank-off	B1-5		
Cyclone	CY 101		
Flask	CF 103		
Long 90° Adapter	NA		
Filter Holder Front	F-112	Filter No.:	
Filter Holder Back	F-206		
Short 90° Adapter	E-207		
Condenser	C-109		
T/C-well U-Adapter	U-207		
XAD Cartridge	V-		
U-Adapter (A)	U-16		
3rd Impinger Mod-GBS	B-112	100 mls D.I. H_2O	
U-Adapter (B)	U-17		
4th Impinger GBS	B-10	100 mls D.I. H_2O	
U-Adapter (C)	U-18		
5th Impinger GBS	B-136	Empty	
U-Adapter (D)	U-101 lck		
6th Impinger Mod-GBS	I-1 ~~I-313~~ lck	~200 g Silica gel	
Gooseneck	(UH 8) ~~UH-1~~ lck		

Component changes during run:
goose neck found to leak before actual sampling. Δ'd SiO2 and Gooseneck from BT4

√20

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Train was used for: Smv Inlet
Run No. 1
Sampling Location: Unit A, Smv Inlet
Sampling Train No. V
Sample Box No. 10284
Sample Box Recovery Date/Person ~~12-7-87~~ LK 12/9/87 L. Kinner
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-9-87 March Griffin Cummins

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)	NA	671.8	776.7 LK	594.0	488.6	602.2 ~~592.7~~ LK	
Initial Wt.(g)		640.9	~~[illegible]~~ 584.2	591.0	404.7	~~631.0~~	
Net Wt. (g)		30.9	192.5	3.0	1.3	9.5	237.2
Description/ Color	—	—	—	—	—	80% spent	
Sample Bottle Tare Wt. (g)	461.05	(461.1)		461.1			
Sample Number	1014	1015		1016			

9.5
1.3
3.0
192.5
30.9
1 1 2
237.2

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)	*	
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.5	304.9	NA	461.1
Sample Number	1013	1011	1012	1013
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)				
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

* weigh @ MRI

V71

C.2 Run No. 1 Baghouse Outlet

```
FILE NAME - R1SVOUT                                            PROG.=VER 01/13/88 V2
RUN # - 1                                                      01-15-1988  17:02:47
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - 'DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=             306.703
Final Meter Volume (Cubic Feet)=               421.795
Meter Factor=                                    1.127
Multiple leak checks, see end of printout               Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                 129.709
Gas Volume (Dry Standard Cubic Feet)=          126.911

Barometric Pressure (in Hg)=                     29.95
Static Pressure (Inches H2O)=                   -19.30

Percent Oxygen=                                    8.6
Percent Carbon Dioxide=                           10.9
Moisture Collected (ml)=                         488.0
Percent Water=                                    15.3

Average Meter Temperature (F)=                      83
Average Delta H (in H2O)=                         2.07
Average Delta P (in H2O)=                        0.693
Average Stack Temperature (F)=                     270

Dry Molecular Weight=                            30.09
Wet Molecular Weight=                            28.23

Average Square Root of Delta P (in H2O)=        0.8258
% Isokinetic=                                    100.1

Pitot Coefficient=                                0.84
Sampling Time (Minutes)=                         160.0
Nozzle Diameter (Inches)=                        0.271
Stack Axis #1 (Inches)=                           57.0
Stack Axis #2 (Inches)=                           50.0
Rectangular Stack
Stack Area (Square Feet)=                        19.79

Stack Velocity  (Actual, Feet/min)=              3,386
Flow Rate (Actual, Cubic ft/min)=               67,012
Flow rate (Standard, Wet, Cubic ft/min)=        46,244
Flow Rate (Standard, Dry, Cubic ft/min)=        39,153

Particulate Loading - Front Half

Particulate Weight (g)=                         0.0000    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=         0.0000         0.0000     0.0000
Particulate Loading, Actual (gr/cu ft)=         0.0000
Emission Rate (lb/hr)=                            0.00

No Back Half Analysis
```

```
                      * * METRIC UNITS * *
FILE NAME - R1SVOUT                                               PROG.=VER 01/13/88 V2
RUN # - 1                                                         01-15-1988  17:03:15
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - `DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=            8.685
Final Meter Volume (Cubic Meters)=             11.944
Meter Factor=                                   1.127
Multiple leak checks, see end of printout                Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=                3.673
Gas Volume (Dry Standard Cubic Meters)=         3.594

Barometric Pressure (mm Hg)=                      761
Static Pressure (mm H20)=                        -490

Percent Oxygen=                                   8.6
Percent Carbon Dioxide=                          10.9
Moisture Collected (ml)=                        488.0
Percent Water=                                   15.3

Average Meter Temperature (C)=                     28
Average Delta H (mm H20)=                        52.5
Average Delta P (mm H20)=                        17.6
Average Stack Temperature (C)=                    132

Dry Molecular Weight=                           30.09
Wet Molecular Weight=                           28.23

Average Square Root of Delta P (mm H20)=       4.1620
% Isokinetic=                                   100.1

Pitot Coefficient=                               0.84
Sampling Time (Minutes)=                        160.0
Nozzle Diameter (mm)=                            6.88
Stack Axis #1 (Meters)=                         1.448
Stack Axis #2 (Meters)=                         1.270
Rectangular Stack
Stack Area (Square Meters)=                     1.839

Stack Velocity  (Actual, m/min)=                1,032
Flow rate (Actual, Cubic m/min)=                1,898
Flow rate (Standard, Wet, Cubic m/min)=         1,309
Flow rate (Standard, Dry, Cubic m/min)=         1,109

Particulate Loading - Front Half

Particulate Weight (g)=                        0.0000    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=          0.0          0.0         0.0
Particulate Loading, Actual (mg/cu m)=            0.0
Emission Rate (kg/hr)=                           0.00

No Back Half Analysis
```

```
FILE NAME - R1SVOUT                                           PROG.=VER 01/13/88 V2
RUN # - 1                                                     01-15-1988  17:03:42
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Point #      Delta P    Delta H    Stack T      Meter T
            (in. H2O) (in. H2O)     (F)     In(F)  Out(F)
 1           1.100      3.35       263       64       64
 2           0.950      2.90       281       69       64
 3           0.830      2.60       272       78       64
 4           0.860      2.50       265       83       66
 5           0.800      2.40       280       89       70
 6           0.800      2.30       276       92       70
 7           0.880      2.60       266       92       73
 8           0.780      2.30       278       92       74
 9           0.700      2.10       270       94       76
 10          0.700      2.10       265       94       77
 11          0.700      2.10       277       95       78
 12          0.550      1.60       268       95       79
 13          0.500      1.45       265       95       80
 14          0.460      1.30       275       94       80
 15          0.460      1.30       270       94       80
 16          0.350      1.05       250       92       80
 17          0.850      2.60       273       76       71
 18          0.760      2.30       272       80       76
 19          0.760      2.30       266       88       76
 20          0.740      2.20       272       90       76
 21          0.810      2.40       270       93       78
 22          0.750      2.20       267       94       78
 23          0.730      2.15       272       95       79
 24          0.680      2.00       267       94       80
 25          0.580      1.70       271       94       80
 26          0.610      1.80       270       94       80
 27          0.650      1.90       266       94       80
 28          0.680      2.05       272       92       80
 29          0.700      2.10       268       92       80
 30          0.660      2.00       268       92       80
 31          0.340      1.05       271       92       80
 32          0.450      1.40       261       92       80


Fraction                 Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                           (g)        (g)        (g)       (g)
DRY CATCH                0.0000     0.0000     0.0000    0.0000
FILTER                   0.0000     0.0000     0.0000    0.0000

Fraction                 Final Wt.  Tare Wt.    Vol.     Net Wt.
                           (g)        (g)       (ml)       (g)
PROBE RINSE              0.0000     0.0000      0.0    0.0000
IMPINGERS                0.0000     0.0000      0.0    0.0000
Probe Rinse Blank (mg/ml)=  0.0000
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
   0.0050    80.0000
   0.0010    80.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 1 Project Number 8910

Date Dec 9, 1987

Plant MERC

Sampling Location Outlet Semivolatile Train #6

FIELD CREW

Crew Chief	Surman
Testing Engineer	March
Assistant Testing Engineer	Soderberg
Process Engineer	
Other	

V22

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC

Sampling Location Outlet

Run No. 1

Date Dec 9, 1987

Operator March

Train #6

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice in. H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	% H_2O	
Barometric Pressure Corrected to Sampling Elevation – 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm – (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	P_s/P_m	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head in. H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in		
Actual Nozzle Diameter, in.		
Reference, Δp, in. H_2O		

Isokinetic sampling equation:

Where: $$Vm_i = (K)(Tm + 460)\sqrt{\frac{\Delta P_s}{Ts + 460}}$$

$$K = \frac{5.168\,(Cp)\,(\theta i)\,(Mf)\,(Dn^2)}{PB}$$

Vm_i = Volume of the Meter per Sampling Interval, ft^3

K = Constant of Fixed and Assumed Parameters, Dimensionless

ΔPs = Velocity Head of S Pitot, in. H_2O

Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	θi	
Mole Fraction Dry Gas – (100 – % H_2O)/100	Mf	
Nozzle Diameter, in.	Dn	
5.168 (_____) (_____) (_____) (____^{2}) ________	K	

COMPUTER PRINTOUT

12-9-87
Outlet
Semivolatile

```
% H2O=15.
M FACTOR=1.127
DELTA H CAL=2.002
B P=29.85
STATIC P=-19.8
CP=0.84
MIN/PNT=5.
AVG STK T=280.
AVG DELTA P=0.85
% O2=5.
% CO2=14.8
M TEMP=70.
M RATE,CFM=0.75
CALC NZL D=  0.2663
NZL D= 0.2710
DRY MW=    30.56
WET MW=    28.68
DELTA H= 2.561
S. RATE= 0.776
```

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page. C-18

V73

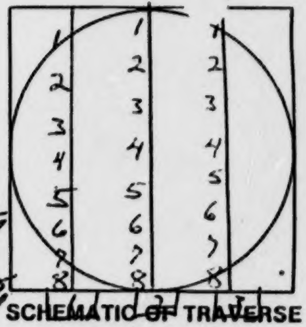
FIELC \TA

RUN NO. 1
PROJECT NO. 8910
PLANT MERC
DATE Dec 9, 1987
SAMPLING LOCATION Outlet FF
SAMPLE TYPE Semivolatile
OPERATOR March
FILTER NO.
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP UH-4

Train #6

PROBE NO.
PROBE LENGTH AND TYPE 6' glass
SAMPLE BOX NO. 10-(6)
METER BOX NO.
TEMP. CONTROLLER NO. X-9032
TEMP. METER NO. 9517
THERMOCOUPLE I.D. NO. T72-1
UMBILICAL CORD I.D. NO. U-50-10
UMBILICAL CORD I.D. NO. —
NOZZLE NO. N-3

NOZZLE DIA. 0.271
ASSUMED MOISTURE % 15
METER ΔH @ 2.002
METER CORRECTION 1.127
PITOT NO. S-5
PITOT COEFFICIENT 0.840
BAROMETRIC PRESSURE ~~29.85~~ 29.95
SITE TO BARO. ELEVATION (ft.) 20
CORRECTED B.P. (0.1 in./100 ft.) ~~29.83~~ 29.95
STATIC PRESSURE ~~-19.8~~ -19.3



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK ≥3" H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1325					
PASS/FAIL						

PITOT LEAK CHECK ≥3" H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	1320	1700	1710	1843	1852
VACUUM, In. Hg	≥15"	18"	≥15"	18"	≥15"
CFM	.012	.005	.005	.001	.010
VOLUMES					
FINAL		SPS 365.18 ~~365.265~~		422.377	
INITIAL		364.860		422.115	
DIFFERENCE		~~0.405~~ 0.32		.262	

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)					
VACUUM, In. Hg		≥15"		≥15"	
CFM					
VOLUMES					
FINAL					
INITIAL					
DIFFERENCE					

INITIAL VOLUME 306.703
FINAL VOLUME 422.115
LEAK CHECK VOLUME 0.32
ADJUSTED FINAL VOLUME 421.795

v24

COMMENTS

RUN NO. 1
DATE 12-9-87 Train #6
SAMPLING LOCATION Outlet F.F.
PROJECT NO. 8910
p. 1 of 2
OPERATOR March

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL 308.703 DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD Temp °F
	0	1535														
2-1	5	1540	311.12	310.77	1.10	3.35	3.35	263	64	64	16	38	263	231	253	51
2-1	10	1545	315.20	315.16	.95	2.83	2.90	281	64	64	17	38	264	236	253	39
2-2	15	1550	319.06	319.38	.83	2.53	2.60	272	78	64	16	43	269	243	256	40
2-2	20	1555	323.04	323.66	.86	2.66	2.50	265	83	66	14	44	266	236	260	40
2-3	25	1600	326.88	327.61	.80	2.45	2.40	280	89	70	13	44	266	236	263	40
2-3	30	1605	330.73	331.57	.80	2.47	2.30	276	92	70	12	44	266	237	264	40
2-4	35	1610	334.82	335.29	.88	2.76	2.60	266	92	73	11	44	266	240	265	39
2-4	40	1615	338.63	339.28	.78	2.41	2.30	278	92	74	12	45	266	235	265	40
2-5	45	1620	342.28	342.88	.70	2.19	2.10	270	94	76	12	45	266	238	265	40
2-5	50	1625	345.95	346.59	.70	2.21	2.10	265	94	77	10	46	254	237	261	40
2-6	55	1630	349.59	350.09	.70	2.18	2.10	277	95	78	11	46	254	237	260	40
2-6	60	1635	352.84	353.45	.55	1.73	1.60	268	95	79	9	46	254	240	259	41
2-7	65	1640	355.94	356.52	.50	1.58	1.45	265	95	80	9	46	254	234	259	40
2-7	70	1645	358.90	359.30	.46	1.44	1.30	275	94	80	8	45	255	245	259	39
2-8	75	1650	361.87	362.00	.46	1.45	1.30	270	94	80	7	45	255	247	259	39
2-8	80	1655	364.49	364.860	.35	1.13	1.05	250	92	80	7	45	255	246	259	39
					.34	1.08	1.00	258	90	80	7	45	255	246	259	40
	–	1720		365.180												
3-1	85	1725	369.10	369.07	.85	2.60	2.60	273	76	71	18	42	251	248	262	39
3-1	90	1730	372.86	373.00	.76	2.34	2.30	272	80	76	14	43	257	248	258	40
3-2	95	1735	376.65	376.81	.76	2.38	2.30	266	88	76	12	44	256	249	258	41
3-2	100	1740	380.38	380.61	.74	2.30	2.20	272	90	76	12	45	256	250	258	43
3-3	105	1745	384.31	384.38	.81	2.57	2.40	270	93	78	12	46	255	246	259	44
3-3	110	1750	388.10	388.11	.75	2.36	2.20	267	94	78	12	44	253	251	260	40
3-4	115	1755	391.83	391.82	.73	2.29	2.15	272	95	79	12	43	253	250	259	39
3-4	120	1800	395.45	395.50	.68	2.15	2.00	267	94	80	12	42	249	250	258	39

COMMENTS * Check XAD pressure drop in KC after packing. Suggestion of USEPA - G. Riley

V25

RUN NO. 1
DATE Dec 9, 1982 Train #6
SAMPLING LOCATION FF Outlet
PROJECT NO. 8910
p. 2 of 2
OPERATOR March

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL N/A DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD Temp. °F
3-5	125	1805	398.78	399.10	.58	1.82	1.70	271	94	80	11	42	250	250	257	40
3-5	130	1810	402.20	402.49	.61	1.92	1.80	270	94	80	11	43	250	250	256	40
3-6	135	1815	405.74	405.80	.65	2.06	1.90	266	94	80	10	43	250	249	255	40
3-6	140	1820	409.33	—	.68	2.13	2.05	272	92	80	10	43	249	244	255	41
3-7	145	1825	412.99	412.86	.70	2.20	2.10	268	92	80	11	44	249	250	256	41
3-7	150	1830	416.54	416.20	.66	2.08	2.00	268	92	80	11	43	249	254	255	41
3-8	155	1835	419.04	419.16	.34	1.06	1.05	271	92	80	9	43	249	251	255	41
3-8	160	1840	422.04	422.115	.45	1.43	1.40	261	92	80	8	43	249	250	255	41
								260	90	80	8	44	250	252	255	41

COMMENTS Plant lost a control board a 1845. Will be down a while. MRI had finished the port & was doing leak checks when the upset occured.. EPA called off any 1. see sampling @ 1900.

V26

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 1
Sampling Location: Unit A, Smv outlet
Sampling Train No. VI
Sample Box No. 10196
Sample Box Set Up Date/Person: 12-7-87 / Kinner
Sample Box Leak Check: 0.005 cfm @ 15 in. Hg vacuum

Train to be used for:
[✓ Source Sample]
Pre-Run Proof Blank
Post-Run Proof Blank
Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	
Nozzle	N-3		
Probe	3		
♀ Probe Blank-off	3		
♂ Glass Union Blank-off	N/A		
Glass Union	N/A		
Sample Transfer Line	N/A		
♀ S-T Line Blank-off	BL-6		
Cyclone	~~NA~~		
Flask			
Long 90° Adapter	E-109		
Filter Holder Front	F-113	Filter No.:	
Filter Holder Back	F-207	NA	Initial Weight (grams)
Short 90° Adapter	E-220		
Condenser	C-105		
T/C-well U-Adapter	U-204		
XAD Cartridge	X-103		
U-Adapter (A)	U-19		
3rd Impinger Mod-GBS	B-103	100 mls D.I. H_2O	
U-Adapter (B)	U-20		
4th Impinger GBS	B-157	100 mls D.I. H_2O	
U-Adapter (C)	U-21		
5th Impinger GBS	I-110	Empty	
U-Adapter (D)	U-22		
6th Impinger Mod-GBS	B-11	~200 g Silica gel	
Gooseneck	UH-4		

Component changes during run:

V30

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME

Train was used for: SMV outlet
Source Sample

Run No. 1
Sampling Location: Unit A, SMV outlet
Sampling Train No. VI
Sample Box No. 10196
Sample Box Recovery Date/Person 12-9-87 [illegible]
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-9-87 Marsch [illegible] Cummins

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)	NA	673.6	857.8	741.0	493.9	642.8	
Initial Wt.(g)		640.0	~~[illegible]~~ 573.2	583.1	~~573.2~~ 491.8	627.0	
Net Wt. (g)		33.6	278.6	157.9	2.1	15.8	488.0
Description/ Color	NA	→				80% Spent	
Sample Bottle Tare Wt. (g)	461.1			461.1			
Sample Number	1030	1031		1032			

15.8
2.1
157.9
278.6
33.6
23
488.0

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)	*	
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	~~[illegible]~~ 314.7	NA	461.1
Sample Number	1029	NA	1628	1029
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)	*			
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

* weigh @ MRI

V31

C.3 Run No. 2 Spray Dryer Inlet

```
FILE NAME - R2SVIN                                                  PROG.=VER 01/13/88 V2
RUN # - 2                                                           01-15-1988  17:04:49
LOCATION - MERC-INLET SEMIVOLATILES
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=              431.148
Final Meter Volume (Cubic Feet)=                541.274
Meter Factor=                                     1.023
Multiple leak checks, see end of printout                   Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                  112.659
Gas Volume (Dry Standard Cubic Feet)=           106.104

Barometric Pressure (in Hg)=                      29.64
Static Pressure (Inches H2O)=                     -8.70

Percent Oxygen=                                     8.5
Percent Carbon Dioxide=                            11.0
Moisture Collected (ml)=                          379.2
Percent Water=                                     14.4

Average Meter Temperature (F)=                       96
Average Delta H (in H2O)=                          0.68
Average Delta P (in H2O)=                         1.144
Average Stack Temperature (F)=                      362

Dry Molecular Weight=                             30.10
Wet Molecular Weight=                             28.36

Average Square Root of Delta P (in H2O)=         1.0667
% Isokinetic=                                      99.4

Pitot Coefficient=                                 0.84
Sampling Time (Minutes)=                          240.0
Nozzle Diameter (Inches)=                         0.183
Stack Axis #1 (Inches)=                            50.0
Stack Axis #2 (Inches)=                            47.9
Rectangular Stack
Stack Area (Square Feet)=                         16.62

Stack Velocity  (Actual, Feet/min)=               4,574
Flow Rate (Actual, Cubic ft/min)=                76,032
Flow rate (Standard, Wet, Cubic ft/min)=         47,315
Flow Rate (Standard, Dry, Cubic ft/min)=         40,498

Particulate Loading - Front Half

Particulate Weight (g)=                          0.0000    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=          0.0000        0.0000      0.0000
Particulate Loading, Actual (gr/cu ft)=          0.0000
Emission Rate (lb/hr)=                             0.00

No Back Half Analysis
```

```
                          * * METRIC UNITS * *
FILE NAME - R2SVIN
RUN # - 2                                                  PROG.=VER 01/13/88 V2
LOCATION - MERC-INLET SEMIVOLATILES                        01-15-1988  17:05:17
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=              12.208
Final Meter Volume (Cubic Meters)=                15.327
Meter Factor=                                      1.023
Multiple leak checks, see end of printout                  Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=                   3.190
Gas Volume (Dry Standard Cubic Meters)=            3.004

Barometric Pressure (mm Hg)=                         753
Static Pressure (mm H2O)=                           -221

Percent Oxygen=                                      8.5
Percent Carbon Dioxide=                             11.0
Moisture Collected (ml)=                           379.2
Percent Water=                                      14.4

Average Meter Temperature (C)=                        36
Average Delta H (mm H2O)=                           17.2
Average Delta P (mm H2O)=                           29.1
Average Stack Temperature (C)=                       184

Dry Molecular Weight=                              30.10
Wet Molecular Weight=                              28.36

Average Square Root of Delta P (mm H2O)=          5.3761
% Isokinetic=                                       99.4

Pitot Coefficient=                                  0.84
Sampling Time (Minutes)=                           240.0
Nozzle Diameter (mm)=                               4.65
Stack Axis #1 (Meters)=                            1.270
Stack Axis #2 (Meters)=                            1.216
Rectangular Stack
Stack Area (Square Meters)=                        1.544

Stack Velocity  (Actual, m/min)=                   1,394
Flow rate (Actual, Cubic m/min)=                   2,153
Flow rate (Standard, Wet, Cubic m/min)=            1,340
Flow rate (Standard, Dry, Cubic m/min)=            1,147

Particulate Loading - Front Half

Particulate Weight (g)=                           0.0000    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=             0.0          0.0        0.0
Particulate Loading, Actual (mg/cu m)=               0.0
Emission Rate (kg/hr)=                              0.00

No Back Half Analysis
```

```
FILE NAME - R2SVIN                                                  PROG.=VER 01/13/88 V2
RUN # - 2                                                           01-15-1988  17:05:44
LOCATION - MERC-INLET SEMIVOLATILES
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

Point #       Delta P     Delta H     Stack T        Meter T
             (in. H2O)   (in. H2O)      (F)      In(F)   Out(F)
 1             1.300        0.68        370         66       66
 2             1.300        0.70        360         78       74
 3             1.300        0.72        357         82       76
 4             1.400        0.79        359         86       77
 5             1.300        0.75        363         91       78
 6             1.400        0.81        365         94       80
 7             1.200        0.71        367         98       82
 8             1.200        0.74        362        100       85
 9             1.100        0.69        361        102       86
 10            1.200        0.75        364        104       88
 11            1.100        0.71        367        105       90
 12            1.100        0.69        365        107       91
 13            1.100        0.66        362        108       92
 14            1.100        0.69        361        108       93
 15            0.970        0.59        353        109       94
 16            1.000        0.58        354        109       95
 17            0.930        0.52        360         93       82
 18            1.050        0.61        355         94       92
 19            1.000        0.60        356         98       92
 20            1.000        0.58        363        100       93
 21            0.940        0.57        364        104       94
 22            0.970        0.57        362        105       94
 23            1.100        0.63        366        106       94
 24            0.980        0.58        369        108       96
 25            0.980        0.58        366        109       96
 26            0.970        0.58        363        109       96
 27            1.000        0.58        362        109       97
 28            0.980        0.58        362        110       98
 29            1.000        0.58        363        110       98
 30            0.970        0.56        363        110       98
 31            0.850        0.49        348        110       98
 32            0.890        0.51        344        110       98
 33            1.600        0.88        360         86       86
 34            1.600        0.89        372         88       87
 35            1.400        0.81        374         92       87
 36            1.300        0.80        367         97       87
 37            1.250        0.75        366        100       88
 38            1.200        0.75        367        101       88
 39            1.100        0.68        366        104       88
 40            1.200        0.73        363        105       90
```

```
FILE NAME - R2SVIN                                          PROG.=VER 01/13/88 V2
RUN # - 2                                                   01-15-1988  17:06:13
LOCATION - MERC-INLET SEMIVOLATILES
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

 41          1.100       0.70       361       107       92
 42          1.200       0.72       358       109       94
 43          1.400       0.83       362       110       94
 44          1.200       0.74       366       112       95
 45          1.300       0.77       370       112       96
 46          1.300       0.77       369       113       97
 47          1.000       0.60       362       114       98
 48          1.100       0.65       355       114       98


Fraction                   Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                              (g)        (g)       (g)        (g)
DRY CATCH                   0.0000     0.0000    0.0000     0.0000
FILTER                      0.0000     0.0000    0.0000     0.0000

Fraction                   Final Wt.  Tare Wt.    Vol.      Net Wt.
                              (g)        (g)      (ml)        (g)
PROBE RINSE                 0.0000     0.0000     0.0     0.0000
IMPINGERS                   0.0000     0.0000     0.0     0.0000
Probe Rinse Blank (mg/ml)=  0.0000
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
    0.0040    80.0000
    0.0010    60.0000
    0.0020    80.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 2

Project Number 8910-L-02-12

Date Dec 10, 1987

Plant MERC

Sampling Location Inlet Semivols TRAIN #5

FIELD CREW

Crew Chief Jim Surman

Testing Engineer Scott Klamm

Assistant Testing Engineer Steve Cummins

Schliesser

Process Engineer

Other Laura Kinner lab

V32

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC
Sampling Location Inlet - SV #5
Run No. 2

Date Dec 10 1987
Operator S. Klamm
Train #5

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice in H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	% H_2O	
Barometric Pressure Corrected to Sampling Elevation − 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm + (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	P_s P_m	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head, in. H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in.		
Actual Nozzle Diameter, in.		
Reference, Δp, in. H_2O		

Isokinetic sampling equation:

Where: $Vm_i = (K)(Tm + 460)\sqrt{\dfrac{\Delta P_s}{Ts + 460}}$

$K = \dfrac{5.168\,(Cp)\,(\theta i)\,(Mf)\,(Dn^2)}{PB}$

Vm_i = Volume of the Meter per Sampling Interval, ft^3
K = Constant of Fixed and Assumed Parameters, Dimensionless
ΔPs = Velocity Head of S Pitot, in. H_2O
Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	θi	
Mole Fraction Dry Gas − (100 − % H_2O) 100	Mf	
Nozzle Diameter, in.	Dn	
5.168 (____) (____) (____) (____^{2})	K	

COMPUTER PRINTOUT

Dec 10, 1987
SV Inlet

```
% H2O=15.
M FACTOR=1.023
DELTA H CAL=1.699
B P=29.64
STATIC P=-8.
CP=0.836
MIN/PNT=5.
AVG STK T=371.
AVG DELTA P=1.02
% O2=8.
% CO2=11.
M TEMP=100.
M RATE,CFM=0.75
CALC NZL D=  0.2402
NZL D= 0.1930
DRY MW=    30.08
WET MW=    28.26
[illegible] 0.572
```

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page. C-30

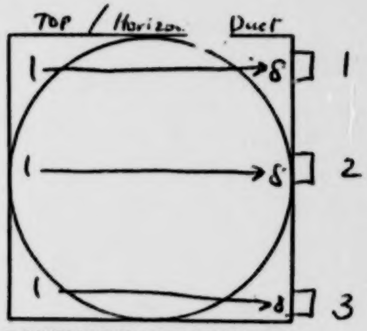
V33

FIELD DATA

RUN NO. 2
PROJECT NO. 8710-L-02-12
PLANT MERC
DATE Dec 10, 1987
SAMPLING LOCATION Inlet-SV
SAMPLE TYPE Semivol.
OPERATOR S. Klamm
FILTER NO. —
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP UH-8

PROBE NO. UL-2
PROBE LENGTH AND TYPE 8' Glass
SAMPLE BOX NO. ~~10~~ 8
METER BOX NO. 9
TEMP. CONTROLLER NO. X-9030
TEMP. METER NO. 9518
THERMOCOUPLE I.D. NO. TC-96-1
UMBILICAL CORD I.D. NO. U25-6
UMBILICAL CORD I.D. NO.
NOZZLE NO. N-2

NOZZLE DIA. 0.183
ASSUMED MOISTURE % 15%
METER ΔH@ 1.699
METER CORRECTION 1.023
PITOT NO. S-3
PITOT COEFFICIENT 0.836
BAROMETRIC PRESSURE 29.74
SITE TO BARO. ELEVATION (ft.) 160
CORRECTED B.P. (0.1 in./100 ft.) 29.64
STATIC PRESSURE ~~-8.0~~ -8.7



SCHEMATIC OF TRAVERSE POINT LAYOUT

Train #5

PITOT LEAK CHECK ≥3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1100	1630	1631	1805		
PASS/FAIL		PASS		PASS		

PITOT LEAK CHECK ≥3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	PORT 2		PORT 3		PORT 1
	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	1018	1407	1420	1600	1620
VACUUM, in. Hg	≥15"	6"	≥15"	7"	≥15"
CFM	.008	.004	.003	.001	.005
VOLUMES					
FINAL		468.447		502.847	
INITIAL		468.30		502.708	
DIFFERENCE		0.147		0.147	

NON-SAMPLE VOLUME →

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1800				
VACUUM, in. Hg	9"	≥15"		≥15"	
CFM	.002 ~~.006~~ SWC				
VOLUMES					
FINAL					
INITIAL					
DIFFERENCE					

INITIAL VOLUME 431.148
FINAL VOLUME 541.568
LEAK CHECK VOLUME 0.294
ADJUSTED FINAL VOLUME 541.274

V34

COMMENTS

RUN NO. 2 Train #5 **SAMPLING LOCATION** Inlet - SV **p.** 1 **of** 2
DATE Dec 10, 1987 **PROJECT NO.** 8910-L-02-12 **OPERATOR** S. Klamm

	TRAVERSE POINT NUMBER	CLOCK TIME (24-hr.)	SAMPLING TIME, min	GAS METER READING (V_m), ft³ INITIAL 431.146		VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O		STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	KAD °F	Flex line °F
				DESIRED	ACTUAL		DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F							
		1245	0															
Port 2'	2-1	1250	5	433.46	433.50	1.3	.68	.68	370	66	66	5	43	215	228	232	45	220
	2-1	1255	10	435.82	435.70	1.3	.70	.70	360	78	74	5	45	244	227	248	43	243
	2-2	1300	15	438.21	437.68	1.3	.71	.72	357	82	76	5	48	236	227	253	41	243
	2-2	1305	20	440.69	440.12	1.4	.77	.79	359	86	77	5	48	236	226	257	47	239
	2-3	1310	25	443.09	442.52	1.3	.71	.75	363	91	78	6	49	228	227	254	60	233
	2-3	1315	30	445.59	445.00	1.4	.77	.81	365	94	80	6	49	228	228	255	40	245
	2-4	1320	35	447.91	447.38	1.2	.66	.71	367	98	82	6	48	227	227	256	37	244
	2-4	1325	40	450.26	449.77	1.2	.67	.74	362	100	85	6	42	226	229	256	36	244
	2-5	1330	45	452.50	452.08	1.1	.61	.69	361	102	86	6	41	227	227	256	35	244
	2-5	1335	50	454.86	454.47	1.2	.67	.75	364	104	88	6	41	225	226	256	35	245
	2-6	1340	55	457.11	456.86	1.1	.61	.71	367	105	90	6	42	224	227	256	36	247
C-32	2-6	1345	60	459.37	459.21	1.1	.62	.69	365	107	91	6	43	224	227	257	36	246
	2-7	1350	65 ~~70~~	461.65	461.50	1.1	.62	.66	362	108	92	6	43	224	226	257	37	244
	2-7	1355	70	463.92	463.84	1.1	.62	.69	361	108	93	6	44	224	225	257	37	245
	2-8	1400	75	466.07	466.07	0.97	0.55	.59	353	109	94	6	44	223	224	256	38	245
	2-8	1405	80	468.26	468.30	1.0	.57	.58	354	109	95	6	44	222	222	255	38	245
		~~1432~~	0															
Port 3	3-1	1434	0		468.447													
	3-1	1436	5	470.49	470.45	0.93	.51	.52	360	93	82	6	49	224	222	250	44	245
	3-1	1441	10	472.69	472.58	1.05	.59	.61	355	94	92	6	48	225	226	252	38	244
	3-2	1446	15	474.85	474.86	1.0	.56	.60	356	98	92	6	47	224	224	253	38	244
	3-2	1451	20	476.99	476.93	1.0	.56	.58	363	100	93	6	46	224	226	254	36	243
	3-3	1456	25	479.09	479.10	0.94	.53	.57	364	104	94	6	45	224	223	254	37	241
	3-3	1501	30	481.22	481.24	0.97	.55	.57	362	105	94	6	43	222	226	254	37	243
	3-4	1506	35	483.49	483.42	1.1	.62	.63	368	106	94	7	43	222	223	255	37	247
	3-4	1511	40	485.63	485.61	0.98	.55	.58	369	108	96	7	44	222	224	255	38	249
	3-5	1516	45	487.78	487.79	0.98	.55	.58	366	109	96	7	44	222	223	255	43	243
	3-5	1521	50	489.93	489.96	0.97	.55	.58	363	109	96	7	44	221	222	255	37	247

COMMENTS

v35

RUN NO. 2 Train #5 SAMPLING LOCATION Inlet - SV p. 2 of 2
DATE Dec 10, 1987 PROJECT NO. 8710-L-02-12 OPERATOR S. Klamm

TRAVERSE POINT NUMBER	CLOCK TIME (24-hr.)	SAMPLING TIME, min	GAS METER READING (V_m), ft³ INITIAL ____ DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H₂O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H₂O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET (T_m in), °F	OUTLET (T_m out), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD °F	Flex line °F
3-6	1526	55	492.10	492.11	1.0	.57	.58	362	109	97	~~45~~ 7	45	221	223	255	37	244
3-6	1531	60	494.27	494.28	0.98 ~~1.05~~	[illegible]	.58	362	110	98	7	45	221	221	254	38	244
3-7	1536	65	496.45	496.46	1.0	.57	.58	363	110	98	7	44	222	225	253	38	246
3-7	1541	70	498.60	498.62	0.97	.55	.56	363	110	98	7	44	222	223	252	37	245
3-8	1546	75	500.63	500.66	0.85	.49	.49	348	110	98	7	43	221	221	253	37	244
3-8	1551	80	502.71	502.708	0.89	.52	.51	344	110	98	7	43	220	219	252	37	246
	1636	0		502.847	1.6	.68	.88	360	86	86	8	45	213	218	242	41	245
1-1	1641	5	505.52	505.246	1.6	.87	.89	372	88	87	8	44	221	223	247	37	270
1-1	1646	10	508.18	507.85	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
1-2	1651	15	510.68	510.36	1.4 [illegible] sink	.76	.81	374	92	87	8	45	222	221	239	37	262
1-2	1656	20	513.11	512.94	1.3	.72	.80	367	97	87	8	44	221	220	230	38	262
1-3	1701	25	515.50	515.23	1.25	.69	.75	366	100	88	8	44	249	223	235	38	264
1-3	1706	30	517.84	517.63	1.2	.67	.75	367	101	88	8	45	248	224	235	40	223 +
1-4	1711	35	520.09	519.95	1.1	.61	.68	366	104	88	8	43	236	221	243	35	230
1-4	1716	40	522.45	522.34	1.2	.67	.73	363	105	90	8	42	227	221	247	35	241
1-5	1721	45	524.73	524.71	1.1	.62	.70	361	107	92	8	42	231	224	250	36	239
1-5	1726	50	527.11	527.10	1.2	.68	.72	358	109	93	8	43	228	223	251	36	246
1-6	1731	55	529.68	529.61	1.4	.79	.83	362	110	94	8	42	227	221	255	35	249
1-6	1736	60	532.06	532.07	1.2	.68	.74	366	112	95	8	40	228	223	258	34	249
1-7	1741	65	534.54	534.52	1.3	.73	.77	370	112	96	9	39	228	223	258	36	249
1-7	1746	70	537.02	537.01	1.3	.73	.77	369	113	97	9	40	228	222	259	36	249
1-8	1751	75	539.21	539.28	1.0	.57	.60	362	114	98	9	41	228	223	259	38	248
1-8	1756	80	541.51	541.568	1.1	.63	.65	355	114	98	9	42	228	225	259	37	249

PORT 1

COMMENTS + Flex line temporarily unplugged (thermocouple, not sample line)

v36

C-33

Revision 9-4-86

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

~~Train to be~~ used for:
[✓ Source Sample]
Pre-Run Proof Blank
Post-Run Proof Blank
Location Blank

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 2
Sampling Location: Unit A, Inlet Sm
Sampling Train No. 5
Sample Box No. 10284
Sample Box Set Up Date/Person: 12-8-87 Kinner
Sample Box Leak Check: 0.006 cfm @ 15 in. Hg vacuum

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N-2		
Probe	5		
♀ Probe Blank-off	5		
♂ Glass Union Blank-off	5		
Glass Union	5		
Sample Transfer Line	5		
♀ S-T Line Blank-off	Bl-5		
Cyclone	Cy 101		
Flask	CF 103		
Long 90° Adapter	NA		
Filter Holder Front	~~F-112~~ F-105	Filter No.:	
Filter Holder Back	~~F-206~~ F-201	NA	
Short 90° Adapter	E-207		
Condenser	C-109		
T/C-well U-Adapter	U-207		
XAD Cartridge	X-		
U-Adapter (A)	U-16		
3rd Impinger Mod-GBS	B-112	100 mls D.I. H_2O	
U-Adapter (B)	U-17		
4th Impinger GBS	B-10	100 mls D.I. H_2O	
U-Adapter (C)	U-18		
5th Impinger GBS	B-136	Empty	
U-Adapter (D)	U-101		
6th Impinger Mod-GBS	I-1	~200 g Silica gel	
Gooseneck	UH-8		

Component changes during run:
filter house leaks

v41

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 2
Sampling Location: Unit A, Inlet
Sampling Train No. 5
Sample Box No. 10284
Sample Box Recovery Date/Person 12-10-87 B. Kimer
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-10-87 Masch (Griffin Cummins

Train was used for:
Inlet Su
Source Sample

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)	\	680.5	679.1	677.2	642.7	624.8	
Initial Wt.(g)	\	655.8	573.8	584.0	512.1	599.4	
Net Wt. (g)	\	24.7	105.3	93.2	130.6	25.4	379.2
Description/ Color	NA	→				70% Spent	
Sample Bottle Tare Wt. (g)	461.1			461.1			
Sample Number	2014	2015		2016			

24.7
105.3
93.2
130.6
25.4
379.2

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)		
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.5	304.9		461.1
Sample Number	2013	2011	2012	2013
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)				
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

V42

C.4 Run No. 2 Baghouse Outlet

```
FILE NAME - R2SVOUT                                             PROG.=VER 01/13/88 V2
RUN # - 2                                                       01-15-1988  17:09:39
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=              422.520
Final Meter Volume (Cubic Feet)=                605.730
Meter Factor=                                     1.127
Multiple leak checks, see end of printout                 Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                  206.478
Gas Volume (Dry Standard Cubic Feet)=           200.305

Barometric Pressure (in Hg)=                      29.74
Static Pressure (Inches H2O)=                    -20.10

Percent Oxygen=                                     8.6
Percent Carbon Dioxide=                            10.9
Moisture Collected (ml)=                          663.1
Percent Water=                                     13.5

Average Meter Temperature (F)=                       84
Average Delta H (in H2O)=                          2.50
Average Delta P (in H2O)=                         0.749
Average Stack Temperature (F)=                      269

Dry Molecular Weight=                             30.09
Wet Molecular Weight=                             28.46

Average Square Root of Delta P (in H2O)=         0.8597
% Isokinetic=                                     100.3

Pitot Coefficient=                                 0.84
Sampling Time (Minutes)=                          240.0
Nozzle Diameter (Inches)=                         0.271
Stack Axis #1 (Inches)=                            50.0
Stack Axis #2 (Inches)=                            57.0
Rectangular Stack
Stack Area (Square Feet)=                         19.79

Stack Velocity  (Actual, Feet/min)=               3,510
Flow Rate (Actual, Cubic ft/min)=                69,472
Flow rate (Standard, Wet, Cubic ft/min)=         47,510
Flow Rate (Standard, Dry, Cubic ft/min)=         41,101

Particulate Loading - Front Half

Particulate Weight (g)=                          0.0000    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=          0.0000         0.0000     0.0000
Particulate Loading, Actual (gr/cu ft)=          0.0000
Emission Rate (lb/hr)=                             0.00

No Back Half Analysis
```

```
                        * * METRIC UNITS * *
FILE NAME - R2SVOUT                                         PROG.=VER 01/13/88 V2
RUN # - 2                                                   01-15-1988  17:10:06
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=             11.964
Final Meter Volume (Cubic Meters)=               17.152
Meter Factor=                                     1.127
Multiple leak checks, see end of printout               Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=                  5.847
Gas Volume (Dry Standard Cubic Meters)=           5.672

Barometric Pressure (mm Hg)=                        755
Static Pressure (mm H2O)=                          -511

Percent Oxygen=                                     8.6
Percent Carbon Dioxide=                            10.9
Moisture Collected (ml)=                          663.1
Percent Water=                                     13.5

Average Meter Temperature (C)=                       29
Average Delta H (mm H2O)=                          63.5
Average Delta P (mm H2O)=                          19.0
Average Stack Temperature (C)=                      132

Dry Molecular Weight=                             30.09
Wet Molecular Weight=                             28.46

Average Square Root of Delta P (mm H2O)=         4.3328
% Isokinetic=                                     100.3

Pitot Coefficient=                                 0.84
Sampling Time (Minutes)=                          240.0
Nozzle Diameter (mm)=                              6.88
Stack Axis #1 (Meters)=                           1.270
Stack Axis #2 (Meters)=                           1.448
Rectangular Stack
Stack Area (Square Meters)=                       1.839

Stack Velocity  (Actual, m/min)=                  1,070
Flow rate (Actual, Cubic m/min)=                  1,967
Flow rate (Standard, Wet, Cubic m/min)=           1,345
Flow rate (Standard, Dry, Cubic m/min)=           1,164

-Particulate Loading - Front Half

Particulate Weight (g)=                          0.0000    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=            0.0           0.0         0.0
Particulate Loading, Actual (mg/cu m)=              0.0
Emission Rate (kg/hr)=                             0.00

No Back Half Analysis
```

```
FILE NAME - R2SVOUT                                          PROG.=VER 01/13/88 V2
RUN # - 2                                                    01-15-1988  17:10:33
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

Point #        Delta P    Delta H      Stack T       Meter T
              (in. H2O)  (in. H2O)      (F)     In(F)   Out(F)
 1              0.950       2.85        266       60       60
 2              0.850       1.95        273       64       64
 3              1.000       1.90        277       64       64
 4              0.910       2.80        277       70       66
 5              0.870       2.70        261       78       68
 6              0.900       2.70        266       82       70
 7              0.870       2.67        279       88       72
 8              0.840       2.60        265       90       74
 9              0.830       2.60        268       92       76
 10             0.790       2.60        274       94       78
 11             0.640       2.60        266       96       80
 12             0.660       2.60        267       98       81
 13             0.530       2.50        272       99       82
 14             0.570       2.50        273      100       83
 15             0.440       2.00        263      101       84
 16             0.400       1.70        259      102       85
 17             0.880       2.60        267       82       86
 18             0.860       2.60        272       85       87
 19             0.850       2.60        272       94       83
 20             0.960       2.60        270       96       83
 21             0.860       2.50        272       99       84
 22             0.880       2.50        268       78       78
 23             0.810       2.50        272       82       80
 24             0.700       2.50        268       90       78
 25             0.740       2.50        268       92       79
 26             0.740       2.50        270       92       79
 27             0.650       2.50        273       92       79
 28             0.660       2.50        272       92       79
 29             0.540       2.50        264       94       80
 30             0.540       2.50        268       94       80
 31             0.410       1.90        267       95       81
 32             0.420       1.90        264       95       81
 33             0.860       2.60        272       81       78
 34             1.000       2.60        272       84       80
 35             0.950       2.60        272       90       79
 36             0.870       2.60        268       90       79
 37             0.860       2.60        267       90       79
 38             0.820       2.60        271       92       80
 39             0.750       2.60        271       94       80
 40             0.810       2.60        270       94       80
```

```
FILE NAME - R2SVOUT                                              PROG.=VER 01/13/88 V2
RUN # - 2                                                        01-15-1988  17:11:02
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

 41          0.770        2.60        269        94         80
 42          0.800        2.60        269        94         80
 43          0.830        2.60        273        96         82
 44          0.750        2.60        274        96         82
 45          0.680        2.60        265        96         82
 46          0.630        2.60        262        96         82
 47          0.560        2.60        271        94         82
 48          0.460        2.60        267        94         82



Fraction                  Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                            (g)        (g)        (g)       (g)
DRY CATCH                 0.0000     0.0000     0.0000    0.0000
FILTER                    0.0000     0.0000     0.0000    0.0000

Fraction                  Final Wt.  Tare Wt.    Vol.     Net Wt.
                            (g)        (g)       (ml)       (g)
PROBE RINSE               0.0000     0.0000     0.0     0.0000
IMPINGERS                 0.0000     0.0000     0.0     0.0000
Probe Rinse Blank (mg/ml)=  0.0000
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
    0.0030    80.0000
    0.0030    25.0000
    0.0030    55.0000
    0.0010    80.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 2 Project Number 8810

Date 12-10-87

Plant MERC

Sampling Location FF Outlet Semivolatile

Train #6

FIELD CREW

Crew Chief Surman

Testing Engineer March

Assistant Testing Engineer Soderberg

Process Engineer

Other

v43

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC
Sampling Location FF Outlet
Run No. 2

Date Dec 10, 1987
Operator March

Train #6

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice, in H$_2$O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	% H$_2$O	
Barometric Pressure Corrected to Sampling Elevation − 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm + (0.074 × Static Pressure in in. H$_2$O)	P_s	
Ratio of Stack Pressure to Meter Pressure	P_s/P_m	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head, in. H$_2$O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in		
Actual Nozzle Diameter, in		
Reference, Δp, in. H$_2$O		

Isokinetic sampling equation:

$$\text{Where:}\quad Vm_i = (K)(Tm + 460)\sqrt{\frac{\Delta P_s}{Ts + 460}}$$

$$K = \frac{5.168\,(Cp)\,(\theta i)\,(Mf)\,(Dn^2)}{PB}$$

Vm_i = Volume of the Meter per Sampling Interval, ft^3
K = Constant of Fixed and Assumed Parameters, Dimensionless
ΔPs = Velocity Head of S Pitot, in. H$_2$O
Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	θi	
Mole Fraction Dry Gas − (100 − % H$_2$O)/100	Mf	
Nozzle Diameter, in	Dn	
5.168 (____)(____)(____)(____^{2}) / ______	K	

COMPUTER PRINTOUT

Dec 10, 1987
FF Outlet
Semivolatile

```
% H2O=15.
M FACTOR=1.127
DELTA H CAL=2.002
B P=29.71
STATIC P=-19.5
CP=0.84
MIN/PNT=5.
AVG STK T=275.
AVG DELTA P=0.75
% O2=8.
% CO2=11.
M TEMP=60.
M RATE,CFM=0.75
CALC NZL D=  0.2703
NZL D= 0.2710
DRY MW=    30.08
WET MW=    28.26
```

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page.

V44

RUN NO. 2
DATE Dec 10, 1987 Train #6
SAMPLING LOCATION FF Outlet
PROJECT NO. 8910
P.
OPERATOR March

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL 499.350 DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD Temp °F	
3-3	110	1535 ~~1530~~	504.00	—	.88	3.54	2.50	268	78	78	19	41	249	241	251	46	
3-4	115	1540 ~~1535~~	508.48	—	.81	3.26	2.50	272	82	80	20	44	248	242	251	52	*
3-4	120	1545 ~~1540~~	512.68	510.98	.70	2.85	2.50	268	90	78	20	46	247	245	250	36	
3-5	125	1550 ~~1545~~	517.00	515.00	.74	3.02	2.50	268	92	79	20	45	247	243	251	35	
3-5	130	1555 ~~1550~~	521.32	519.15	.74	3.01	2.50	270	92	79	20	44	247	255	252	36	
3-6	135	1600 ~~1555~~	525.36	523.30	.65	2.63	2.50	273	92	79	20	44	247	253	253	36	
3-6	140	1605 ~~1600~~	529.44	527.59	.66	2.68	2.50	272	92	79	20	43	248	255	253	36	
3-7	145	1610 ~~1605~~	533.15	531.68	.54	2.22	2.50	264	94	80	20	43	247	255	252	37	
3-7	150	1615 ~~1610~~	536.86	535.85	.54	2.21	2.50	268	94	80	20	43	248	250	252	37	
3-8	155	1620 ~~1615~~	540.10	539.52	.41	1.68	1.90	267	95	81	15	43	248	250	252	37	
3-8	160	1625 ~~1620~~	543.38	543.170	.42	1.73	1.90	264	95	81	15	42	247	252	253	38	
		1637	DM	543.420													
1-1	165	1642 ~~1638~~	548.02	547.46	.86	3.45	2.60	272	81	78	20	41	247	252	253	37	
1-2	170	1647	553.00	551.76	1.00	4.03	2.60	272	84	80	20	42	248	255	251	37	
1-2	175	1652	557.88	555.86	.95	3.85	2.60	272	90	79	20	4.3	248	256	252	39	
1-2	180	1657	562.57	—	.87	3.55	2.60	268	90	79	20	43	249	253	253	39	
1-3	185	1702	567.22	564.21	.86	3.57	2.60	267	90	79	20	4.3	252	255	255	41	
1-3	190	1707	571.77	568.31	.82	3.34	2.60	271	92	80	20	43	253	254	255	40	
1-4	~~190~~ 195	1712	576.13	572.18	.75	3.06	2.60	271	94	80	20	45	252	256	257	41	
1-4	~~195~~ 200	1717	580.66	—	.81	3.31	2.60	270	94	80	20	46	253	259	259	44	
1-5	205	1722	585.09	580.05	.77	3.15	2.60	269	94	80	20	45	251	254	258	41	
1-5	210	1727	589.59	584.02	.80	3.27	2.60	269	94	80	20	44	254	260	259	41	
1-6	215	1732	594.19	588.01	.83	3.39	2.60	273	96	82	20	44	253	260	259	41	
1-6	220	1737	598.56	591.94	.75	3.06	2.60	274	96	82	20	44	253	260	260	42	
1-7	225	1742	602.74	595.88	.68	2.80	2.60	265	96	82	20	44	259	260	260	42	
1-7	230	1747	606.77	599.64	.63	2.61	2.60	262	96	82	20	44	249	251	258	44	
1-8	235	1752	610.55	603.52	.56	2.29	2.60	271	94	82	20	45	250	247	256	41	

COMMENTS * pump plug inadvertantly pulled - Fixed ← Condenser [illegible]

[Console cannot keep up with sampling rate until points near the port]

1-8 240 | 1757 | 613.97 | 607.360 | .46 | 1.89 | 2.60 | 267 | 94 | 82 | 20 | 44 | 250 | 247 | 256 | 43 |

V47

RUN NO. 2 SAMPLING LOCATION FF Outlet

DATE Dec 10, 1987 Train #6 PROJECT NO. 8910

p. ______

OPERATOR March

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL 422.520 DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD Temp. °F	
	0	1247															
2-1	5	1252	426.63	—	.35	2.86	2.85	266	60	60	20	39	254	260	263	40	
2-1	10	1257	430.52	429.10	.85	2.55	1.95	273	64	64	21	37	246	260	256	36	*
2-2	15	1302	434.74	432.570	1.00	2.98	1.90	277	64	64	21	37	248	262	256	36	**
		1305		432.760		~~2.79~~	~~2.80~~										
2-2	20	1310	436.81	434.73	.91	2.74	2.80	277	70	66	19	39	246	262	255	37	
2-3	25	1315	440.86	438.50	.87	2.70	2.70	261	78	68	19	38	246	258	254	37	
2-3	30	1320	444.98	442.25	.90	2.79	2.70	266	82	70	19	39	246	259	254	37	
2-4	35	1325	449.02	445.89	.87	~~[illegible]~~ 2.67	2.67	279	88	72	19	40	247	258	254	39	
2-4	40	1330	453.05	449.56	.84	2.64	2.60	265	90	74	19	41	246	262	254	40	
2-5	45	1335	457.06	453.26	.83	2.60	2.60	268	92	76	19	42	246	256	255	40	
2-5	50	1340	460.98	456.98	.79	2.47	2.60	274	94	78	19	43	245	256	254	42	
2-6	55	1345	464.53	460.25	.64	2.03	2.60	266	96	80	19	43	246	256	253	41	
2-6	60	1350	468.14	464.58	.66	2.09	2.60	267	98	81	19	43	246	254	253	41	
2-7	65	1355	471.38	468.28	.53	1.67	2.50	272	99	82	19	44	247	254	253	42	
2-7	70	1400	474.74	471.95	.57	1.80	2.50	273	100	83	19	45	247	256	253	43	
2-8	75	1405	477.71	475.64	.44	1.41	2.00	263	101	84	15	46	248	254	253	44	
2-8	80	1410	480.57	479.440	.40	1.29	1.70	259	102	85	15	47	247	254	253	45	
		1500		479.805													
3-1	85	1505	483.94	483.805	.88	2.76	2.60	267	82	86	19	47	247	252	252	44	*
3-1	85	1510	488.03	487.22	.86	2.69	2.60	272	85	87	20	46	247	252	251	41	*
3-2	95	1515	492.11	490.78	.85	2.67	2.60	272	94	83	20	44	246	256	250	41	*
3-2	100	1520	496.46	—	.96	3.03	2.60	270	96	83	20	43	244	252	252	39	
3-3	105	1526 ~~1525~~		498.525	.86			272	99	84	20	43	245	253	252	39	

Exchanged Silica gel & Emptied last 2 impingers

COMMENTS * Cannot pull higher ΔH

** Changed-out XAD cartridge.

V46

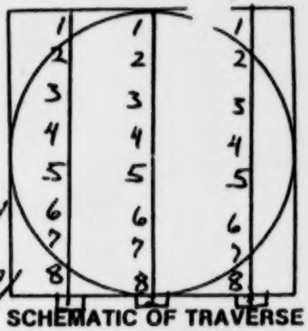
Revision 9-4-86

FIELD \ITA

RUN NO. 2
PROJECT NO. 8910
PLANT MERC
DATE 12-10-87
SAMPLING LOCATION FF Outlet
SAMPLE TYPE Semivolatile
OPERATOR March
FILTER NO.
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP UH-7

PROBE NO.
PROBE LENGTH AND TYPE 6' Glass
SAMPLE BOX NO. 10195
METER BOX NO. 10 (6)
TEMP. CONTROLLER NO. X-9032
TEMP. METER NO. 9517
THERMOCOUPLE I.D. NO. T 72-1
UMBILICAL CORD I.D. NO. U 50-10
UMBILICAL CORD I.D. NO. —
NOZZLE NO. N-3

NOZZLE DIA. 0.271
ASSUMED MOISTURE % 15
METER ΔH@ 2.002
METER CORRECTION 1.127
PITOT NO. S-5
PITOT COEFFICIENT 0.840
BAROMETRIC PRESSURE ~~29.71~~ 29.74
SITE TO BARO. ELEVATION (ft.) N/A
CORRECTED B.P. (0.1 in./100 ft.) ~~29.71~~ 29.74
STATIC PRESSURE ~~-19.3~~ -20.1



SCHEMATIC OF TRAVERSE POINT LAYOUT

Train #6

PITOT LEAK CHECK ≥3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr) 0934	Pass	1806				
PASS/FAIL		PASS				

PITOT LEAK CHECK ≥3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	0930	Omitted	1310	1417	1422
VACUUM, in. Hg	≥15"		≥15" 17"	24"	≥15"
CFM	.007		.003	.003	.005
VOLUMES					
FINAL		432.760		479.805	
INITIAL		432.520		479.440	
DIFFERENCE		0.190		0.365	

Non-Sample Volume

NEW Silica Gel

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	Dm ~~1500~~ 1525	Dm ~~1518~~ 1522	1622	1630	1805
VACUUM, in. Hg	21"	≥15"	20"	≥15"	21"
CFM	.003	.003	.003	.003	.001
VOLUMES					
FINAL	499.350		543.420		
INITIAL	498.525		543.170		
DIFFERENCE	0.825		0.250		

Non-Sample Volume

.190
.365
0.555
.825
.250
1.630

INITIAL VOLUME Dm ~~422.577~~ 422.520
FINAL VOLUME Dm ~~603.5~~ 607.360
LEAK CHECK VOLUME 1.630 ~~.555~~
ADJUSTED FINAL VOLUME ~~606.705~~ 605.730

607.360
1.630

Revision 11/18/86

✓45

COMMENTS

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

~~Train to be used~~ for:
[✓ Source Sample]
~~Pre-Run Proof Blank~~
Post-Run Proof Blank
Location Blank

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 2
Sampling Location: ~~Unit A~~ outlet
Sampling Train No. [✓ 6] ~~VI~~
Sample Box No. 10195
Sample Box Set Up Date/Person: 12-9-87 / Kinner
Sample Box Leak Check: ________ cfm @ ________ in. Hg vacuum

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N-3		
Probe	6		
♀ Probe Blank-off	6		
♂ Glass Union Blank-off	N/A		
Glass Union	N/A		
Sample Transfer Line	N/A		
♀ S-T Line Blank-off	B1-4		
Cyclone	~~Cy 109~~ NA		
Flask	NA		
Long 90° Adapter	E-104		
Filter Holder Front	F-106	Filter No.:	
Filter Holder Back	F-204	NA	
Short 90° Adapter	E-209		
Condenser	C-112		
T/C-well U-Adapter	U-216		
XAD Cartridge	K-135		
U-Adapter (A)	U-122		
3rd Impinger Mod-GBS	B-113	100 mls D.I. H_2O	
U-Adapter (B)	U-147		
4th Impinger GBS	I-107	100 mls D.I. H_2O	
U-Adapter (C)	U-124		
5th Impinger GBS	I-105	Empty	
U-Adapter (D)	U-13		
6th Impinger Mod-GBS	I-313	~200 g Silica gel	
Gooseneck	JH-1		

Component changes during run:
Previously train ④

v52

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 2
Sampling Location: Unit A outlet
Sampling Train No. (6) VI
Sample Box No. 10195
Sample Box Recovery Date/Person 12-10-87 B. Kenned
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-10-87 March Gleltan Cummings

Train was used for:
outlet SMV
Sorrce Sample

BACK HALF RECOVERY

XAD #1
658.0
651.0
7.0g

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)	NA	667.7 ~~661.4~~	733.5 ~~[illegible]~~	758.0	490.2 ~~491.2~~	689.1	~~656.1~~ UK 17.0
Initial Wt.(g)		~~657.~~ 648.7	497.2	566.0	~~583.9~~ 491.2	647.2	~~658.4~~ 663.1 660.6
Net Wt. (g)		19.0	204.8	192.0	-1.0	39.9	17.0
Description/ Color	NA	→	→	→	→	100 %	Spent
Sample Bottle Tare Wt. (g)	461.1			461.1			
Sample Number	2030	2031		2032			

6B
70%
Spent

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g) **		
Net Wt. (g)		

17.0
39.9
192.0
204.8
184.4
219.0
658.1
-2
656.1
7
663.1

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	304.9 NA	NA	461.1
Sample Number	2029	NA	2028	2029
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g) **				
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

* 2 SiO2 impingers, H2O cond emptied @ post check.
- Bottle TARE Wt. 461.1g
- Bottle Sample Wt 645.5
NET added to moisture 184.4g

V53

** weigh @ MERC

C.5 Run No. 3 Spray Dryer Inlet

```
FILE NAME - R3SVIN                                          PROG.=VER 01/13/88 V2
RUN # - R3SVIN                                              01-15-1988  17:11:57
LOCATION - MERC-INLET SEMIVOLATILES
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=          542.973
Final Meter Volume (Cubic Feet)=            614.340
Meter Factor=                                 1.023
Multiple leak checks, see end of printout              Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=               73.008
Gas Volume (Dry Standard Cubic Feet)=        69.500

Barometric Pressure (in Hg)=                  29.43
Static Pressure (Inches H2O)=                 -8.70

Percent Oxygen=                                 8.2
Percent Carbon Dioxide=                        11.3
Moisture Collected (ml)=                      281.1
Percent Water=                                 16.0

Average Meter Temperature (F)=                   86
Average Delta H (in H2O)=                      0.43
Average Delta P (in H2O)=                     1.250
Average Stack Temperature (F)=                  381

Dry Molecular Weight=                         30.14
Wet Molecular Weight=                         28.19

Average Square Root of Delta P (in H2O)=     1.1141
% Isokinetic=                                 100.9

Pitot Coefficient=                             0.84
Sampling Time (Minutes)=                      195.0
Nozzle Diameter (Inches)=                     0.162
Stack Axis #1 (Inches)=                        50.0
Stack Axis #2 (Inches)=                        47.9
Rectangular Stack
Stack Area (Square Feet)=                     16.62

Stack Velocity  (Actual, Feet/min)=           4,863
Flow Rate (Actual, Cubic ft/min)=            80,835
Flow rate (Standard, Wet, Cubic ft/min)=     48,827
Flow Rate (Standard, Dry, Cubic ft/min)=     41,014

Particulate Loading - Front Half

Particulate Weight (g)=                      0.0000    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=      0.0000         0.0000    0.0000
Particulate Loading, Actual (gr/cu ft)=      0.0000
Emission Rate (lb/hr)=                         0.00

No Back Half Analysis
```

```
                         * * METRIC UNITS * *
FILE NAME - R3SVIN                                        PROG.=VER 01/13/88 V2
RUN # - R3SVIN                                            01-15-1988  17:12:25
LOCATION - MERC-INLET SEMIVOLATILES
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=          15.375
Final Meter Volume (Cubic Meters)=            17.396
Meter Factor=                                  1.023
Multiple leak checks, see end of printout               Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=               2.067
Gas Volume (Dry Standard Cubic Meters)=        1.968

Barometric Pressure (mm Hg)=                     748
Static Pressure (mm H2O)=                       -221

Percent Oxygen=                                  8.2
Percent Carbon Dioxide=                         11.3
Moisture Collected (ml)=                       281.1
Percent Water=                                  16.0

Average Meter Temperature (C)=                    30
Average Delta H (mm H2O)=                       10.8
Average Delta P (mm H2O)=                       31.8
Average Stack Temperature (C)=                   194

Dry Molecular Weight=                          30.14
Wet Molecular Weight=                          28.19

Average Square Root of Delta P (mm H2O)=      5.6150
% Isokinetic=                                  100.9

Pitot Coefficient=                              0.84
Sampling Time (Minutes)=                       195.0
Nozzle Diameter (mm)=                           4.11
Stack Axis #1 (Meters)=                        1.270
Stack Axis #2 (Meters)=                        1.216
Rectangular Stack
Stack Area (Square Meters)=                    1.544

Stack Velocity  (Actual, m/min)=               1,482
Flow rate (Actual, Cubic m/min)=               2,289
Flow rate (Standard, Wet, Cubic m/min)=        1,383
Flow rate (Standard, Dry, Cubic m/min)=        1,161

Particulate Loading - Front Half

Particulate Weight (g)=                       0.0000     Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=         0.0            0.0          0.0
Particulate Loading, Actual (mg/cu m)=           0.0
Emission Rate (kg/hr)=                          0.00

No Back Half Analysis
```

```
FILE NAME - R3SVIN
RUN # - R3SVIN                                          PROG.=VER 01/13/88 V2
LOCATION - MERC-INLET SEMIVOLATILES                     01-15-1988  17:12:52
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Point #      Delta P    Delta H    Stack T        Meter T
            (in. H20)  (in. H20)     (F)      In(F)   Out(F)
   1          1.300       0.43       362        68       66
   2          1.400       0.46       382        70       67
   3          1.400       0.46       383        74       68
   4          1.300       0.40       382        77       68
   5          1.700       0.56       380        77       74
   6          1.600       0.56       386        80       74
   7          1.600       0.58       388        84       76
   8          1.400       0.50       388        88       77
   9          1.200       0.38       387        90       78
  10          1.300       0.42       385        92       80
  11          1.200       0.40       385        93       80
  12          1.200       0.40       383        95       82
  13          1.200       0.40       385        96       83
  14          1.200       0.40       383        97       84
  15          1.000       0.34       370        98       86
  16          1.100       0.37       365        98       87
  17          1.000       0.35       375        87       85
  18          1.000       0.36       376        88       86
  19          1.000       0.34       373        91       86
  20          1.000       0.35       375        94       86
  21          1.000       0.34       381        95       87
  22          1.000       0.34       380        97       88
  23          1.000       0.34       378        94       89
  24          1.100       0.37       380        99       90
  25          1.100       0.41       381       100       90
  26          1.200       0.40       381       100       90
  27          1.100       0.37       381       102       91
  28          1.150       0.39       381       102       92
  29          1.100       0.37       381       102       92
  30          1.150       0.39       383       102       92
  31          1.200       0.41       384       102       92
  32          1.000       0.34       372       102       92
  33          1.600       0.55       372        89       87
  34          1.600       0.57       387        90       87
  35          1.450       0.51       388        93       87
  36          1.600       0.51       388        70       70
  37          1.400       0.50       391        72       70
  38          1.400       0.51       390        75       70
  39          1.500       0.53       392        80       70


Fraction                Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                           (g)        (g)        (g)       (g)
DRY CATCH                0.0000     0.0000     0.0000    0.0000
FILTER                   0.0000     0.0000     0.0000    0.0000

Fraction                Final Wt.  Tare Wt.    Vol.     Net Wt.
                           (g)        (g)      (ml)       (g)
PROBE RINSE              0.0000     0.0000     0.0     0.0000
IMPINGERS                0.0000     0.0000     0.0     0.0000
Probe Rinse Blank (mg/ml)=  0.0000
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below
```

```
FILE NAME - R3SVIN                                               PROG.=VER 01/13/88 V2
RUN # - R3SVIN                                                   01-15-1988  17:12:52
LOCATION - MERC-INLET SEMIVOLATILES
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Point #       Delta P    Delta H     Stack T       Meter T
             (in. H20)  (in. H20)     (F)      In(F)   Out(F)
  1            1.300       0.43       362        68      66
  2            1.400       0.46       382        70      67
  3            1.400       0.46       383        74      68
  4            1.300       0.40       382        77      68
  5            1.700       0.56       380        77      74
  6            1.600       0.56       386        80      74
  7            1.600       0.58       388        84      76
  8            1.400       0.50       388        88      77
  9            1.200       0.38       387        90      78
 10            1.300       0.42       385        92      80
 11            1.200       0.40       385        93      80
 12            1.200       0.40       383        95      82
 13            1.200       0.40       385        96      83
 14            1.200       0.40       383        97      84
 15            1.000       0.34       370        98      86
 16            1.100       0.37       365        98      87
 17            1.000       0.35       375        87      85
 18            1.000       0.36       376        88      86
 19            1.000       0.34       373        91      86
 20            1.000       0.35       375        94      86
 21            1.000       0.34       381        95      87
 22            1.000       0.34       380        97      88
 23            1.000       0.34       378        94      89
 24            1.100       0.37       380        99      90
 25            1.100       0.41       381       100      90
 26            1.200       0.40       381       100      90
 27            1.100       0.37       381       102      91
 28            1.150       0.39       381       102      92
 29            1.100       0.37       381       102      92
 30            1.150       0.39       383       102      92
 31            1.200       0.41       384       102      92
 32            1.000       0.34       372       102      92
 33            1.600       0.55       372        89      87
 34            1.600       0.57       387        90      87
 35            1.450       0.51       388        93      87
 36            1.600       0.51       388        70      70
 37            1.400       0.50       391        72      70
 38            1.400       0.51       390        76      70
 39            1.500       0.53       392        80      70


Fraction                 Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                           (g)        (g)       (g)        (g)
DRY CATCH                0.0000     0.0000    0.0000     0.0000
FILTER                   0.0000     0.0000    0.0000     0.0000

Fraction                 Final Wt.  Tare Wt.    Vol.      Net Wt.
                           (g)        (g)       (ml)       (g)
PROBE RINSE              0.0000     0.0000      0.0      0.0000
IMPINGERS                0.0000     0.0000      0.0      0.0000
Probe Rinse Blank (mg/ml)=  0.0000
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
    0.0060    80.0000
    0.0010    80.0000
    0.0050    35.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 3

Project Number 8910-L-02-12

Date Dec 12, 1987

Plant MERC

Sampling Location Inlet Semivols - TRAIN #5

FIELD CREW

Crew Chief Jim Surman

Testing Engineer Scott Klamm

Assistant Testing Engineer Steve Cummins
Steve Schliesser

Process Engineer

Other Laura Kinner lab

v54

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC
Sampling Location Inlet - SV TRAIN #5
Run No. 3

Date Dec 12, 1987
Operator S. Klamm

Train #5

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice, in H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	$\% H_2O$	
Barometric Pressure Corrected to Sampling Elevation − 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm + (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	P_s/P_m	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head, in. H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in.		
Actual Nozzle Diameter, in.		
Reference, Δp, in. H_2O		

Isokinetic sampling equation:

$$\text{Where:}\quad Vm_i = (K)(Tm + 460)\sqrt{\frac{\Delta P_s}{Ts + 460}}$$

$$K = \frac{5.168\,(Cp)(\Theta i)(Mf)(Dn^2)}{PB}$$

Vm_i = Volume of the Meter per Sampling Interval, ft^3
K = Constant of Fixed and Assumed Parameters, Dimensionless
ΔPs = Velocity Head of S Pitot, in. H_2O
Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	Θi	
Mole Fraction Dry Gas − (100 − % H_2O)/100	Mf	
Nozzle Diameter, in.	Dn	
5.168 (_____) (_____) (_____) (_____²) / ________	K	

COMPUTER PRINTOUT

12-12-87

```
% H20=14.4
M FACTOR=1.023
DELTA H CAL=1.699
B P=29.43
STATIC P=-8.7
CP=0.836
MIN/PNT=5.
AVG STK T=362.
AVG DELTA P=1.14
% O2=8.5
% CO2=11.
M TEMP=96.
M RATE,CFM=0.75
CALC NZL D=  0.2329
NZL D= 0.1620
DRY MW=    30.10
ET MW=     28.35
```

Inlet
SV #5
- SWK

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

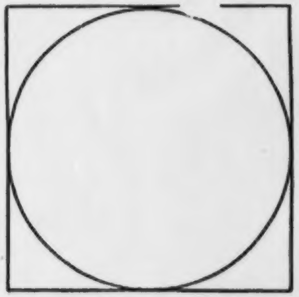
The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page.

FIELD DATA

RUN NO. 3
PROJECT NO. 8910-C-02-12
PLANT MERC
DATE Dec 12, 1987
SAMPLING LOCATION Inlet-SV-#5
SAMPLE TYPE Semivols MM5
OPERATOR S. Klamm
FILTER NO. —
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP UH-8

PROBE NO. VL-2
PROBE LENGTH AND TYPE 8' glass
SAMPLE BOX NO. 8
METER BOX NO. 9
TEMP. CONTROLLER NO. 9030
TEMP. METER NO. 9518
THERMOCOUPLE I.D. NO. 96-1
UMBILICAL CORD I.D. NO. 425-6
UMBILICAL CORD I.D. NO.
NOZZLE NO. N-1

NOZZLE DIA. 0.162
ASSUMED MOISTURE % 14.4
METER ΔH@ 1.699
METER CORRECTION 1.023
PITOT NO. S-3
PITOT COEFFICIENT 0.836
BAROMETRIC PRESSURE 29.53
SITE TO BARO. ELEVATION (ft.) 100
CORRECTED B.P. (0.1 in./100 ft.) 29.43
STATIC PRESSURE -8.7



SCHEMATIC OF TRAVERSE POINT LAYOUT

Train #5

PITOT LEAK CHECK ≥ 3" H_2O

	INITIAL SJC	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	0830 1020	1940				
PASS/FAIL		pass				

PITOT LEAK CHECK ≥ 3" H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

void SJC

	11:38 INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	~~1015~~		0830	1300	1309
VACUUM, in. Hg	≥15"		≥15"	5"	≥15"
CFM	~~.006~~		.005	.006	.007
VOLUMES	0.012				
FINAL			573.11		600.98
INITIAL			572.96		600.75
DIFFERENCE			~~573.11~~ SJC 0.15		0.23

.15
.23
.03
0.41

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1450	1455	1930		
VACUUM, in. Hg	6"	≥15"	7"	≥15"	
CFM	.001	.003	.005		
VOLUMES					
FINAL	614.75				
INITIAL	614.72				
DIFFERENCE	0.03				

V50

INITIAL VOLUME 542.973
FINAL VOLUME 614.75
LEAK CHECK VOLUME 0.41
ADJUSTED FINAL VOLUME 614.34

COMMENTS

RUN NO. 3 Train #5
DATE Dec 12, 1987
SAMPLING LOCATION Inlet SV - Train #5
PROJECT NO. 8910-L-02-12
p. 1 of 2
OPERATOR S. Klamm

	TRAVERSE POINT NUMBER	CLOCK TIME (24-hr.)	SAMPLING TIME, min	GAS METER READING (V_m), ft³ INITIAL 542.973 DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD °F	Flex line °F
		1120	0															
Port 2	2-1	1125	5	544.81	544.87	1.3	.43	.43	362	68	66	3	46	237	234	257	45	229
	2-1	1130	10	546.70	546.76	1.4	.45	.46	382	70	67	4	43	232	231	254	41	231
	2-2	1135	15	548.59	548.67	1.4	.45	.46	383	74	68	4	44	232	232	253	36	241
1140 Shut Down	2-2	1140/1200	20	550.43	550.40	1.3	.42	.40	382	77	68	4	45	231	232	252	36	237
	2-3	1205	25	552.54	552.43	1.7	.56	.56	380	77	74	5	46	230	231	247	38	240
	2-3	1210	30	554.58	554.50	1.6	.52	.56	386	80	74	5	45	228	232	248	37	240
	2-4	1215	35	556.64	556.61	1.6	.52	.58	388	84	76	5	46	229	229	250	38	248
	2-4	1220	40	558.57	558.64	1.4	.46	.50	388	88	77	5	48	229	227	251	37	250
	2-5	1225	45	560.43	560.49	1.2	.37	.38	387	90	78	5	49	229	230	251	41	247
	2-5	1230	50	562.31	562.32	1.3	.43	.42	385	92	80	5	49	229	231	252	37	248
	2-6	1235	55	564.11	564.13	1.2	.40	.40	385	93	80	5	47	227	228	252	37	248
	2-6	1240	60	565.93	565.95	1.2	.40	.40	383	95	82	5	43	226	224	249	35	248
	2-7	1245	65	567.74	567.75	1.2	.40	.40	385	96	83	5	42	221	222	249	35	249
	2-7	1250	70	569.56	569.57	1.2	.40	.40	383	97	84	5	43	220	223	248	36	250
	2-8	1255	75	571.24	571.26	1.0	.34	.34	370	98	86	5	43	220	222	247	35	250
	2-8	1300	80	573.01	572.96	1.1	.38	.31	365	98	87	5	43	221	222	245	35	249
	~~3~~	1325 restart		573.11														
Port 3	3-1	1330	85	574.77	574.62	1.0	.33	.35	375	87	85	5	44	222	223	241	41	250
	3-1	1335	90	576.42	576.47	1.0	.33	.36	376	88	86	5	44	223	226	243	37	249
	3-2	1340	95	578.09	578.05	1.0	.34	.34	373	91	86	5	45	223	225	246	38	249
	3-2	1345	100	579.76	579.73	1.0	.34	.35	375	94	86	5	45	224	226	247	36	249
	3-3	1350	105 [illegible]	581.42	581.42	1.0	.33	.34	381	95	87	5	44	223	224	248	36	248
	3-3	1355	110 120	583.09	583.10	1.0	.33	.34	380	97	88	5	44	224	223	247	36	249
	3-4	1400	115 125	584.76	584.76	1.0	.34	.34	378	94	89	5	44	224	226	248	36	249
	3-4	1405	120 130	586.52	586.47	1.1	.37	.37	380	99	90	5	43	224	223	249	36	246
	3-5	1410	125 135	588.28	588.30	1.1	.37	.41	381	100	90	5	43	224	225	249	37	248
	3-5	1415	130 140	590.11	590.11	1.2	.40	.40	381	100	90	5	43	223	226	249	37	248

COMMENTS 1140 Shut Down for plant problems / 1200 restart

V57

Revision 8-4-86

RUN NO. 3 Train #5
DATE Dec. 12, 1987
SAMPLING LOCATION Inlet SV-Train #5
PROJECT NO. 8910-L-02-72
p. 2 of 2
OPERATOR S. Klemm

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL ____ DESIRED	GAS METER READING ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD °F	Flex line °F
3-6	1420	135 145	591.88	591.88	1.1	.37	.37	381	102	91	5	44	223	222	249	38	246
3-6	1425	140 150	593.68	593.67	1.15	.39	.39	381	102	92	5	43	223	225	249	36	247
3-7	1430	145 155	595.45	595.42	1.1	.37	.37	381	102	92	5	43	223	223	250	36	248
3-7	1435	150 160 ~~200~~	597.25	597.20	1.15	.39	.39	383	102	92	5	44	222	222	250	36	249
3-8	1440	155 165	~~599.55~~ 599.04	599.02	1.2	.40	.41	384	102	92	6	43	222	223	250	37	249
3-8	1445	160 170	600.73	600.75	1.0	.34	.34	372	102	92	6	44	221	220	250	37	248
~~1~~	1510	resmet	600.98														
1-1	1515	165 ~~170~~	603.09	602.67	1.6	.54	.55	372	89	87	6	50	221	219	245	46	246
1-1	1520	170 175	605.17	604.77	1.6	.53	.57	387	90	87	6	45	222	223	248	39	247
1-2	1525/1815	180	175 607.17	606.54	1.45	.48	.51	388	93	87	6	45	222	223	247	39	247
1-2	1820	185	180 609.18	608.75	1.6	.51	.51	388	70	70	7	43	243	244	254	38	244
1-3	1825	190	185 611.08	610.72	1.4	.45	.50	391	72	70	7	41	233	247	255	37	245
1-3	1830	195 ~~200~~	190 612.97	612.70	1.4	.45	.51	390	76	70	7	42	230	244	255	38	242
1-4	1835/	200	195 614.93	614.72	1.5	.48	.53	392	80	70	7	43	230	242	256	39	243
1-4	END OF TEST	205															
		210															
		215															
		1840 220															
		225															
		230															

PART 1

COMMENTS * 1525 shutdown for plant problems
** 1835 shut down for plant problems

V58

Revision 8-4-86

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. 3

Sampling Location: Unit A, Outlet

Sampling Train No. 5

Sample Box No. 10284

Sample Box Set Up Date/Person: 12-10-87 Kimmel

Sample Box Leak Check: ________ cfm @ ________ in. Hg vacuum

Train to be used for:
[✓ Source Sample]
Pre-Run Proof Blank
Post-Run Proof Blank
Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N-1		
Probe	5		
♀ Probe Blank-off	5		
♂ Glass Union Blank-off	5		
Glass Union	5		
Sample Transfer Line	5		
♀ S-T Line Blank-off	B1-5		
Cyclone	Cy 101		
Flask	CF 103		
Long 90° Adapter	NA		
Filter Holder Front	F-105	Filter No.:	
Filter Holder Back	F-201	N/A	
Short 90° Adapter	E-207		
Condenser	C-109		________
T/C-well U-Adapter	U-207		
XAD Cartridge	X		________
U-Adapter (A)	U-16		
3rd Impinger Mod-GBS	B-112	100 mls D.I. H_2O	________
U-Adapter (B)	U-17		
4th Impinger GBS	B-10	100 mls D.I. H_2O	________
U-Adapter (C)	U-18		
5th Impinger GBS	B-136	Empty	________
U-Adapter (D)	U-101		
6th Impinger Mod-GBS	I-1	~200 g Silica gel	________
Gooseneck	UH8		

Component changes during run:

V63

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Train was used for: Inlet SMV
Run No. 3
Sampling Location: Unit A, Inlet
Sampling Train No. 5
Sample Box No. 10284
Sample Box Recovery Date/Person 12-12-87
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-12-87

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)	NA	674.1	648.4	758.5	575.7	656.2	
Initial Wt.(g)		651.7	582.3	588.5	570.0	639.3	
Net Wt. (g)		22.4	66.1	170.0	5.7	16.9	281.1
Description/ Color	N/A					70% Spent	
Sample Bottle Tare Wt. (g)	461.1			461.1			
Sample Number	3014	3015		3016			

16.9
5.7
170.0
66.1
22.4
281.1

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)	*	
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	~~464.4~~ 364.9	NA	461.1
Sample Number	3013	3011	3012	3013
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)	*			
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

* weigh Back @ MRI

v64

C.6 Run No. 3 Baghouse Outlet

```
FILE NAME - R3SVOUT                                        PROG.=VER 01/13/88 V2
RUN # - 3                                                  01-19-1988  13:59:53
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=              607.800
Final Meter Volume (Cubic Feet)=                663.835
Meter Factor=                                     1.127
Multiple leak checks, see end of printout                Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                   63.151
Gas Volume (Dry Standard Cubic Feet)=            63.190

Barometric Pressure (in Hg)=                      29.53
Static Pressure (Inches H2O)=                    -21.10

Percent Oxygen=                                     8.2
Percent Carbon Dioxide=                            11.3
Moisture Collected (ml)=                          329.1
Percent Water=                                     19.7

Average Meter Temperature (F)=                       61
Average Delta H (in H2O)=                          0.51
Average Delta P (in H2O)=                         0.843
Average Stack Temperature (F)=                      272

Dry Molecular Weight=                             30.14
Wet Molecular Weight=                             27.75

Average Square Root of Delta P (in H2O)=         0.9101
% Isokinetic=                                     104.8

Pitot Coefficient=                                 0.84
Sampling Time (Minutes)=                          160.0
Nozzle Diameter (Inches)=                         0.183
Stack Axis #1 (Inches)=                            50.0
Stack Axis #2 (Inches)=                            57.0
Rectangular Stack
Stack Area (Square Feet)=                         19.79

Stack Velocity  (Actual, Feet/min)=               3,807
Flow Rate (Actual, Cubic ft/min)=                75,342
Flow rate (Standard, Wet, Cubic ft/min)=         50,836
Flow Rate (Standard, Dry, Cubic ft/min)=         40,822

Particulate Loading - Front Half

Particulate Weight (g)=                          0.0000   Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=          0.0000        0.0000    0.0000
Particulate Loading, Actual (gr/cu ft)=          0.0000
Emission Rate (lb/hr)=                             0.00

No Back Half Analysis
```

```
                         * * METRIC UNITS * *
FILE NAME - R3SVOUT                                         PROG.=VER 01/13/88 V2
RUN # - 3                                                   01-19-1988  14:00:21
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=          17.210
Final Meter Volume (Cubic Meters)=            18.797
Meter Factor=                                  1.127
Multiple leak checks, see end of printout             Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=               1.788
Gas Volume (Dry Standard Cubic Meters)=        1.789

Barometric Pressure (mm Hg)=                     750
Static Pressure (mm H2O)=                       -536

Percent Oxygen=                                  8.2
Percent Carbon Dioxide=                         11.3
Moisture Collected (ml)=                       329.1
Percent Water=                                  19.7

Average Meter Temperature (C)=                    16
Average Delta H (mm H2O)=                       12.9
Average Delta P (mm H2O)=                       21.4
Average Stack Temperature (C)=                   133

Dry Molecular Weight=                          30.14
Wet Molecular Weight=                          27.75

Average Square Root of Delta P (mm H2O)=      4.5867
% Isokinetic=                                  104.8

Pitot Coefficient=                              0.84
Sampling Time (Minutes)=                       160.0
Nozzle Diameter (mm)=                           4.65
Stack Axis #1 (Meters)=                        1.270
Stack Axis #2 (Meters)=                        1.448
Rectangular Stack
Stack Area (Square Meters)=                    1.839

Stack Velocity  (Actual, m/min)=               1,160
Flow rate (Actual, Cubic m/min)=               2,133
Flow rate (Standard, Wet, Cubic m/min)=        1,440
Flow rate (Standard, Dry, Cubic m/min)=        1,156

Particulate Loading - Front Half

Particulate Weight (g)=                       0.0000   Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=         0.0           0.0        0.0
Particulate Loading, Actual (mg/cu m)=           0.0
Emission Rate (kg/hr)=                          0.00

No Back Half Analysis
```

```
FILE NAME - R3SVOUT                                        PROG.=VER 01/13/88 V2
RUN # - 3                                                  01-19-1988  14:00:47
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Point #       Delta P    Delta H     Stack T      Meter T
             (in. H20)  (in. H20)     (F)      In(F)  Out(F)
  1           0.970       0.55        280        46      46
  2           1.100       0.64        274        50      46
  3           1.100       0.64        263        52      47
  4           1.100       0.64        277        57      49
  5           1.100       0.64        274        60      50
  6           1.100       0.64        274        56      52
  7           1.100       0.66        274        59      54
  8           1.100       0.68        266        61      55
  9           0.890       0.54        277        62      55
  10          0.910       0.56        276        70      58
  11          0.940       0.60        268        74      61
  12          0.870       0.56        276        72      61
  13          0.580       0.38        273        72      62
  14          0.550       0.34        267        72      62
  15          0.450       0.26        271        72      64
  16          0.550       0.32        270        70      64
  17          0.820       0.50        270        60      56
  18          1.100       0.66        271        62      58
  19          0.930       0.54        270        62      58
  20          0.930       0.54        275        64      58
  21          0.930       0.56        272        64      60
  22          0.930       0.58        269        67      60
  23          0.840       0.52        275        68      60
  24          0.850       0.52        275        68      60
  25          0.830       0.50        268        70      60
  26          0.800       0.46        274        70      60
  27          0.690       0.40        274        70      60
  28          0.740       0.46        267        70      60
  29          0.600       0.38        274        70      60
  30          0.600       0.40        274        71      60
  31          0.460       0.30        263        71      60
  32          0.500       0.30        265        71      61


Fraction                Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                           (g)       (g)        (g)       (g)
DRY CATCH                0.0000    0.0000     0.0000    0.0000
FILTER                   0.0000    0.0000     0.0000    0.0000

Fraction                Final Wt.  Tare Wt.    Vol.     Net Wt.
                           (g)       (g)       (ml)       (g)
PROBE RINSE              0.0000    0.0000      0.0    0.0000
IMPINGERS                0.0000    0.0000      0.0    0.0000
Probe Rinse Blank (mg/ml)=  0.0000
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
    0.0010    80.0000
    0.0010    80.0000
```

```
FILE NAME - R3SVOUT2                                         PROG.=VER 01/13/88 V2
RUN # - 3                                                    01-19-1988  14:03:46
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=               607.800
Final Meter Volume (Cubic Feet)=                 674.810
Meter Factor=                                      1.127
Multiple leak checks, see end of printout                    Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                    75.520
Gas Volume (Dry Standard Cubic Feet)=             75.615

Barometric Pressure (in Hg)=                       29.53
Static Pressure (Inches H2O)=                     -21.10

Percent Oxygen=                                      8.2
Percent Carbon Dioxide=                             11.3
Moisture Collected (ml)=                           329.1
Percent Water=                                      17.0

Average Meter Temperature (F)=                        61
Average Delta H (in H2O)=                           0.52
Average Delta P (in H2O)=                          0.864
Average Stack Temperature (F)=                       272

Dry Molecular Weight=                              30.14
Wet Molecular Weight=                              28.07

Average Square Root of Delta P (in H2O)=          0.9226
% Isokinetic=                                      101.4

Pitot Coefficient=                                  0.84
Sampling Time (Minutes)=                           190.0
Nozzle Diameter (Inches)=                          0.183
Stack Axis #1 (Inches)=                             50.0
Stack Axis #2 (Inches)=                             57.0
Rectangular Stack
Stack Area (Square Feet)=                          19.79

Stack Velocity  (Actual, Feet/min)=                3,837
Flow Rate (Actual, Cubic ft/min)=                 75,936
Flow rate (Standard, Wet, Cubic ft/min)=          51,234
Flow Rate (Standard, Dry, Cubic ft/min)=          42,518

Particulate Loading - Front Half

Particulate Weight (g)=                           0.0000     Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=           0.0000         0.0000    0.0000
Particulate Loading, Actual (gr/cu ft)=           0.0000
Emission Rate (lb/hr)=                              0.00

No Back Half Analysis
```

```
                         * * METRIC UNITS * *
FILE NAME - R3SVOUT2
RUN # - 3                                                 PROG.=VER 01/13/88 V2
LOCATION - MERC-OUTLET SEMIVOLATILES                      01-19-1988  14:04:14
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=             17.210
Final Meter Volume (Cubic Meters)=               19.108
Meter Factor=                                     1.127
Multiple leak checks, see end of printout               Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=                  2.138
Gas Volume (Dry Standard Cubic Meters)=           2.141

Barometric Pressure (mm Hg)=                        750
Static Pressure (mm H2O)=                          -536

Percent Oxygen=                                     8.2
Percent Carbon Dioxide=                            11.3
Moisture Collected (ml)=                          329.1
Percent Water=                                     17.0

Average Meter Temperature (C)=                       16
Average Delta H (mm H2O)=                          13.3
Average Delta P (mm H2O)=                          22.0
Average Stack Temperature (C)=                      133

Dry Molecular Weight=                             30.14
Wet Molecular Weight=                             28.07

Average Square Root of Delta P (mm H2O)=         4.6499
% Isokinetic=                                     101.4

Pitot Coefficient=                                 0.84
Sampling Time (Minutes)=                          190.0
Nozzle Diameter (mm)=                              4.65
Stack Axis #1 (Meters)=                           1.270
Stack Axis #2 (Meters)=                           1.448
Rectangular Stack
Stack Area (Square Meters)=                       1.839

Stack Velocity  (Actual, m/min)=                  1,169
Flow rate (Actual, Cubic m/min)=                  2,150
Flow rate (Standard, Wet, Cubic m/min)=           1,451
Flow rate (Standard, Dry, Cubic m/min)=           1,204

Particulate Loading - Front Half

Particulate Weight (g)=                          0.0000   Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=            0.0         0.0         0.0
Particulate Loading, Actual (mg/cu m)=              0.0
Emission Rate (kg/hr)=                             0.00

No Back Half Analysis
```

```
FILE NAME - R3SVOUT2                                           PROG.=VER 01/13/88 V2
RUN # - 3                                                      01-19-1988  14:04:41
LOCATION - MERC-OUTLET SEMIVOLATILES
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Point #       Delta P   Delta H     Stack T      Meter T
            (in. H20) (in. H20)     (F)     In(F)  Out(F)
 1            0.970      0.55       280       46       46
 2            1.100      0.64       274       50       46
 3            1.100      0.64       263       52       47
 4            1.100      0.64       277       57       49
 5            1.100      0.64       274       60       50
 6            1.100      0.64       274       56       52
 7            1.100      0.66       274       59       54
 8            1.100      0.68       266       61       55
 9            0.890      0.54       277       62       55
 10           0.910      0.56       276       70       58
 11           0.940      0.60       268       74       61
 12           0.870      0.56       276       72       61
 13           0.580      0.38       273       72       62
 14           0.550      0.34       267       72       62
 15           0.450      0.26       271       72       64
 16           0.550      0.32       270       70       64
 17           0.820      0.50       270       60       56
 18           1.100      0.66       271       62       58
 19           0.930      0.54       270       62       58
 20           0.930      0.54       275       64       58
 21           0.930      0.56       272       64       60
 22           0.930      0.58       269       67       60
 23           0.840      0.52       275       68       60
 24           0.850      0.52       275       68       60
 25           0.830      0.50       268       70       60
 26           0.800      0.46       274       70       60
 27           0.690      0.40       274       70       60
 28           0.740      0.46       267       70       60
 29           0.600      0.38       274       70       60
 30           0.600      0.40       274       71       60
 31           0.460      0.30       263       71       60
 32           0.500      0.30       265       71       61
 33           0.950      0.58       272       66       64
 34           0.900      0.54       270       67       66
 35           1.100      0.68       272       70       66
 36           1.000      0.60       270       51       51
 37           0.930      0.58       271       52       52
 38           1.000      0.62       277       54       52


Fraction                 Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                           (g)        (g)       (g)        (g)
DRY CATCH                0.0000     0.0000    0.0000     0.0000
FILTER                   0.0000     0.0000    0.0000     0.0000

Fraction                 Final Wt.  Tare Wt.    Vol.     Net Wt.
                           (g)        (g)       (ml)       (g)
PROBE RINSE              0.0000     0.0000      0.0    0.0000
IMPINGERS                0.0000     0.0000      0.0    0.0000
Probe Rinse Blank (mg/ml)=  0.0000
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
    0.0010    80.0000
    0.0010    80.0000
    0.0010    30.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 3
Project Number 8910

Date Dec ~~11th~~ 12, 1987
Plant MERC
Sampling Location EF Outlet
TRAIN #6

FIELD CREW

Crew Chief Surman
Testing Engineer March

Assistant Testing Engineer Soderberg

Process Engineer

Other

V65

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC
Sampling Location FF Outlet
Run No. 3

Date Dec ~~15~~ 12, 1987
Operator March

Train No. 6

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice in H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	% H_2O	
Barometric Pressure Corrected to Sampling Elevation − 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm − (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	P_s P_m	
Average Stack Temperature °F	$T_{s_{avg.}}$	
Average Velocity Head in H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in		
Actual Nozzle Diameter, in.		
Reference, Δp, in. H_2O		

Isokinetic sampling equation:

Where: $Vm_i = (K)(Tm + 460)\sqrt{\dfrac{\Delta P_s}{Ts + 460}}$

$$K = \frac{5.168\,(Cp)(\theta i)(Mf)(Dn^2)}{PB}$$

Vm_i = Volume of the Meter per Sampling Interval, ft^3
K = Constant of Fixed and Assumed Parameters, Dimensionless
ΔPs = Velocity Head of S Pitot, in. H_2O
Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	θi	
Mole Fraction Dry Gas − (100 − % H_2O) 100	Mf	
Nozzle Diameter, in.	Dn	
5.168 (____) (____) (____) (____^{2}) / ________	K	

COMPUTER PRINTOUT

Dec 12, 1987
FF Outlet
Semivolatile Train
D. March

```
% H2O=[illegible].
[illegible] FAC [illegible]=[illegible].27
DELTA H [illegible]=2.002
B P=29.33
STATIC P=-2[illegible]
CP=0.84
MIN/PNT=5.
AVG STK T=275.
AVG DELTA P=0.8
% O2=8.
% CO2=11.
M TEMP=85.
[illegible] EXCF=0.75
CALC NZL D=  0.2645
NZL D= 0.1850
DRY MW=    30.06
WET MW=    29.25
DELTA H= 0.[illegible]
```

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page.

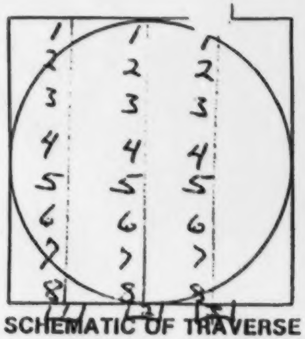
V66

FIELD ·TA

RUN NO. 3
PROJECT NO. 8910
PLANT MERC
DATE Dec 12 ~~Nov~~ 1987
SAMPLING LOCATION FF Outlet
SAMPLE TYPE Semivolatile
OPERATOR March
FILTER NO.
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP CLH-4
Train #6

PROBE NO.
PROBE LENGTH AND TYPE 6' Glass
SAMPLE BOX NO. 10196
METER BOX NO. 10 (C)
TEMP. CONTROLLER NO. X-9032
TEMP. METER NO. 9517
THERMOCOUPLE I.D. NO. T-22-1
UMBILICAL CORD I.D. NO. U-50-10
UMBILICAL CORD I.D. NO. —
NOZZLE NO. N-2

NOZZLE DIA. 0.183
ASSUMED MOISTURE % 15
METER ΔH@ 2.002
METER CORRECTION 1127
PITOT NO. S-5
PITOT COEFFICIENT 0.840
BAROMETRIC PRESSURE 29.53
SITE TO BARO. ELEVATION (ft.) N/A
CORRECTED B.P. (0.1 in./100 ft.) 29.53
STATIC PRESSURE ~~-21.15~~ -21.15



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK ≥ 3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr) 0336	0336 Pass	1940				
PASS/FAIL		Pass				

PITOT LEAK CHECK ≥ 3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	~~0355~~ 0822	1300	1306	1448	1500
VACUUM, In. Hg	≥15"	7"	≥15"	7"	≥15"
CFM	DM ~~.025~~ .001	.001	.001	.001	.001
VOLUMES					
FINAL		~~638.500~~ 636.480 DM		617.510	
INITIAL		~~607.800~~ DM		617.490	
DIFFERENCE		~~0.020~~		.020	

.105

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1920 "		1940		
VACUUM, In. Hg	unattainable	≥15"	7"	≥15"	
CFM	"		.001		
VOLUMES					
FINAL	636.770	669.660	664.180		
INITIAL	636.565	669.510	663.940		
DIFFERENCE	.105	.150	.240		

INITIAL VOLUME 607.800
FINAL VOLUME 663.94
LEAK CHECK VOLUME .105
ADJUSTED FINAL VOLUME 663.835

COMMENTS

✓G7

Revision 11/18/86

RUN NO. 3 Train #6
DATE Dec 12, 1987
SAMPLING LOCATION FF Outlet Train #6
PROJECT NO. 8510
p. 1 / 3
OPERATOR March

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL 607.500 DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD Temp °F	
	0	1116															
2-1	5	1121	609.63	609.97	.97	.57	.55	280	46	46	5	44	250	245	256	36	
2-1	10	1126	611.58	611.86	1.10	.66	.64	274	50	46	5	42	250	250	256	35	
2-2	15	1131	613.57	613.63	1.10	.67	.64	263	52	47	5	45	250	246	256	34	
2-2	20	1136	615.54	615.40	1.10	.66	.64	277	57	49	5	48	249	247	256	35	
2-3	25	1141	617.52	617.490	1.10	.67	.64	274	60	50	5	47	248	245	257	34	*
		1201		617.570													
2-3	30	1206	619.49	619.24	1.10	.67	.64	274	56	52	6	47	252	250	262	35	
2-4	35	1211	621.48	621.35	1.10	.67	.66	274	59	54	6	48	252	252	262	35	
2-4	40	1216	623.49	623.48	1.10	.68	.68	266	61	55	6	48	251	252	261	35	
2-5	45	1221	625.29	625.37	.89	.54	.54	277	62	55	5	48	250	247	261	36	
2-5	50	1226	627.12	627.03	.91	.56	.56	276	70	58	5	48	251	247	260	35	
2-6	55	1231	629.01	628.79	.94	.59	.60	268	74	61	5	48	244	249	257	36	
2-6	60	1236	630.82	630.50	.87	.54	.56	276	72	61	5	47	243	248	256	35	
2-7	65	1241	632.29	632.26	.58	.36	.38	223	73	62	5	47	242	247	254	36	
2-7	70	1246	633.73	633.82	.55	.34	.34	267	72	62	5	47	242	244	254	36	
2-8	75	1251	635.04	635.20	.45	.28	.26	271	72	64	4	47	242	246	253	36	
2-8	80	1256	636.480	636.565	.55	.34	.32	270	70	64	4	—	243	249	253	37	
		1326		636.720													
3-1	85	1331	638.500	638.59	.82	.50	.50	270	60	56	5	49	246	252	255	39	
3-1	90	1336	640.50	640.59	1.10	.68	.66	271	62	58	6	50	246	247	253	36	
3-2	95	1341	642.36	642.50	.93	.57	.54	270	62	58	6	49	246	249	251	37	
3-2	100	1346	644.20	644.36	.93	.57	.54	275	64	58	5	49	246	247	251	37	
3-3	105	1351	646.06	645.95	.93	.57	.56	272	64	60	5	49	245	249	251	37	
3-3	110	1356	647.92	647.85	.93	.58	.58	264	67	60	6	48	245	248	250	37	
3-4	115	1401	649.69	649.75	.84	.52	.52	275	68	60	6	48	246	247	250	38	
3-4	120	1406	651.46	651.71	.85	.52	.52	275	68	60	6	47	245	245	257	38	

COMMENTS
*Plant shut-down @ 1141 - RDF feed problem

V68

Revision 9-4-85

RUN NO. 3 Train #6

DATE Dec 12, 1987

SAMPLING LOCATION FF Outlet Train #6

PROJECT NO. 8410

p. 2 of 3

OPERATOR March

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V$_m$), ft^3 INITIAL N/A DESIRED	ACTUAL	VELOCITY HEAD (Δp$_s$), in. H$_2$O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H$_2$O DESIRED	ACTUAL	STACK TEMP. (T$_s$), °F	DRY GAS METER TEMPERATURE INLET (T$_{m\,in}$), °F	OUTLET (T$_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD Temp. °F
3-5	125	1411	653.23	653.44	.83	.52	.50	268	70	60	6	47	244	248	250	39
3-5	130	1416	654.96	654.95	.80	.49	.46	274	70	60	5	47	243	246	249	39
3-6	135	1421	656.56	656.48	.69	.42	.40	274	70	60	5	47	244	247	250	39
3-6	140	1426	658.23	658.05	.74	.46	.46	267	70	60	5	47	242	2 —	248	40
3-7	145	1431	659.72	659.57	.60	.37	.38	274	70	60	5	47	241	243	247	40
3-7	150	1436	661.22	661.13	.60	.37	.40	274	71	60	5	47	240	240	247	40
3-8	155	1441	662.54	662.60	.46	.29	.30	263	71	60	5	48	244	250	248	41
3-8	160	1446	663.92	663.940	.50	.31	.30	265	71	61	5	49	245	251	249	41
		1511 ~~1451~~		664.180												
1-1	165	1516	664.06	~~664.180~~	.45 ~~.59~~	.59	.58	272	66	64	5	48	248	259	255	42
1-1	170	1521	667.91	667.83	.90	.56	.54	270	67	66	5	47	247	259	252	38
1-2	175	1526	669.94	669.510	1.10	.68	.68	272	70	66	5	48	246	258	252	39
1-2	180	1531														

Stop Here

*

COMMENTS * Plant shut down due to gas feed problem.

All sample volume drawn while probe was in port no. 1 is suspect due to failure of leak check at termination of run. The filter holder outlet tube had slipped out of the teflon ferrule in the connecting 90° adapter. Leakrate was not determined because it was too large to be corrected.

Revision 9-4-86

C-71

V69

RUN NO. 3 Train #6
DATE 12-12-87

SAMPLING LOCATION EF Outlet Train #6
PROJECT NO. 8410

p. 3 of 3
OPERATOR March

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.) 1821	GAS METER READING (V_m), ft³ INITIAL 669.660 DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	XAD Temp °F	
1-2	180	1826	671.54	671.45	1.00	.60	.60	270	51	51	5	45	250	256	254	43	
1-3	185	1831	673.36	673.22	.93	.56	.58	271	52	52	5	46	249	256	246	12	
1-3	190	1836	675.25	675.035	1.00	.60	.62	277	54	52	5	46	248	254	241	42	
1-4																	*

COMMENTS * Shut down due to plant problem - EPA directive.

V 10

Revision 9-4-86

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 3
Sampling Location: Unit A, SMV outlet
Sampling Train No. 6
Sample Box No. 10196
Sample Box Set Up Date/Person: 12-10-87 Kissner
Sample Box Leak Check: 0.008 cfm @ 15 in. Hg vacuum

Train to be used for:
[✓ Source Sample]
Pre-Run Proof Blank
Post-Run Proof Blank
Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N-2		
Probe	6		
♀ Probe Blank-off	6		
♂ Glass Union Blank-off	N/A		
Glass Union	N/A		
Sample Transfer Line	N/A		
♀ S-T Line Blank-off	BL-6		
Cyclone	N/A		
Flask			
Long 90° Adapter	E-109		
Filter Holder Front	F-113	Filter No.:	
Filter Holder Back	F-207	NA	
Short 90° Adapter	E-220		
Condenser	C-105		
T/C-well U-Adapter	U-204		
XAD Cartridge	X-		
U-Adapter (A)	U-19		
3rd Impinger Mod-GBS	B-103	100 mls D.I. H_2O	
U-Adapter (B)	U-20		
4th Impinger GBS	B-157	100 mls D.I. H_2O	
U-Adapter (C)	U-21		
5th Impinger GBS	I-110	Empty	
U-Adapter (D)	U-22		
6th Impinger Mod-GBS	B-11	~200 g Silica gel	
Gooseneck	VH4		

Component changes during run:

~~V73~~
V74

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 3
Sampling Location: Unit A, outlet
Sampling Train No. 6
Sample Box No. 10196
Sample Box Recovery Date/Person 12-12-87 D. Kinner
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-12-87 Marsh Allman

Train was used for: SMV outlet

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)		676.7	704.6	669.6	583.1	661.0	
Initial Wt.(g)		658.5	596.4	587.6	492.7	630.7	
Net Wt. (g)		18.2	~~118.2~~ 108.2	82.0	90.4	30.3	339.1
Description/ Color	NA	→	→	→	→	90 3o Spent C	
Sample Bottle Tare Wt. (g)	461.1			461.1			
Sample Number	~~3014~~ 3030 uk	~~3015~~ 3031 uk		~~3016~~ uk 3032			

18.2
118.2
82.0
90.4
30.3
~~339.1~~
329.1

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)	*	
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	* 461.1	NA	NA	461.1
Sample Number	~~3013~~ 3029 uk		~~3012~~ uk 3028	~~3013~~ uk 3029
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)	*			
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

wt. Back @ MRI

~~V74~~ V75

C.7 Proof/Blank Train Set-up/Recovery

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

Train to be used for:
Source Sample
[✓ Pre-Run Proof Blank]
Post-Run Proof Blank
Location Blank

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. pre-run - Blank
Sampling Location: Unit A,
Sampling Train No. 4
Sample Box No. 10195
Sample Box Set Up Date/Person: 12-5-87 / Kinner
Sample Box Leak Check: .005 cfm @ 15 in. Hg vacuum

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N/A		
Probe	4		
♀ Probe Blank-off	4		
♂ Glass Union Blank-off	4		
Glass Union	4		
Sample Transfer Line	4		
♀ S-T Line Blank-off	B1-4		
Cyclone	Cy 105		
Flask	CF 104		
Long 90° Adapter	NA		
Filter Holder Front	F106	Filter No.:	
Filter Holder Back	F204	NA	
Short 90° Adapter	E-209		
Condenser	C-112		
T/C-well U-Adapter	U-216		
XAD Cartridge	X-125		
U-Adapter (A)	U-122		
3rd Impinger Mod-GBS	B-113	100 mls D.I. H_2O	NA
U-Adapter (B)	U-147		
4th Impinger GBS	I-107	100 mls D.I. H_2O	
U-Adapter (C)	U-124		
5th Impinger GBS	I-105	Empty	
U-Adapter (D)	U-15		
6th Impinger Mod-GBS	I-1	~200 g Silica gel	
Gooseneck	UH-8		

Component changes during run:

VI

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME

Train was used for: ~~pre-Run~~ Project Blank

Run No. pre-Run Blank
Sampling Location: Unit A,
Sampling Train No. 4
Sample Box No. 10195
Sample Box Recovery Date/Person 12-5-87 /Kinner
~~Nozzle~~/Probe/Sample Transfer Line Recovery Date/Persons 12-7-87

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)							
Initial Wt.(g)		NA		NA		NA	
Net Wt. (g)							
Description/ Color	NA						
Sample Bottle Tare Wt. (g)	461.1g			461.1g			
Sample Number	11014	11015		11016			

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)	*	
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1g	~~461.1g~~ EPK NA	NA	461.1g
Sample Number	11013	NA (no catch)	11012	11013
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)	*			
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

* See p/m notebook for Tare wts.

v2

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

Train to be used for:
- Source Sample
- [✓ Pre-Run Proof Blank]
- Post-Run Proof Blank
- Location Blank

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. pre-run Blank
Sampling Location: Unit A,
Sampling Train No. 5
Sample Box No. 10284
Sample Box Set Up Date/Person: 12-5-87 / Kinner
Sample Box Leak Check: .007 cfm @ 15 in. Hg vacuum

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N/A		
Probe	5		
♀ Probe Blank-off	5		
♂ Glass Union Blank-off	5		
Glass Union	5		
Sample Transfer Line	5		
♀ S-T Line Blank-off	Bl-5		
Cyclone	— NA		
Flask	— NA		
Long 90° Adapter	E-164		
Filter Holder Front	F112	Filter No.:	
Filter Holder Back	F206	NA	
Short 90° Adapter	E-207		
Condenser	C-109		
T/C-well U-Adapter	U-207		
XAD Cartridge	K-141		
U-Adapter (A)	U-16		
3rd Impinger Mod-GBS	B-112	100 mls D.I. H_2O	NA
U-Adapter (B)	U-17		
4th Impinger GBS	B-10	100 mls D.I. H_2O	
U-Adapter (C)	U-18		
5th Impinger GBS	B-136	Empty	
U-Adapter (D)	U-101		
6th Impinger Mod-GBS	I-313	~200 g Silica gel	
Gooseneck	UH-1		

Component changes during run:

V3

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. pre-Run Blank
Sampling Location: Unit A,
Sampling Train No. 5
Sample Box No. 10284
Sample Box Recovery Date/Person 12-5-87
~~Nozzle~~/Probe/Sample Transfer Line Recovery Date/Persons 12-7-87

Train was used for: pre-run Prod Blank

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)							
Initial Wt.(g)		WA		WA		WA	
Net Wt. (g)							
Description/ Color	WA						
Sample Bottle Tare Wt. (g)	461.1g			461.1g			
Sample Number	12014	12015		12016			

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)	*	
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1g	WA	WA	461.1g
Sample Number	12013	NO Catch	12012	12013
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)	*			
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

* See p/m notebook for Tare wts.

v4

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. pre-run Blank

Sampling Location: Unit A,

Sampling Train No. 6

Sample Box No. 10196

Sample Box Set Up Date/Person: 12-5-87 / Kimes

Sample Box Leak Check: ________ cfm @ ________ in. Hg vacuum

Train to be used for:
Source Sample
[✓ Pre-Run Proof Blank]
Post-Run Proof Blank
Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N/A		
Probe	6		
a Probe Blank-off	6		
a Glass Union Blank-off	N/A		
Glass Union	N/A		
Sample Transfer Line	N/A		
a S-T Line Blank-off	B1-6		
Cyclone	NA		
Flask			
Long 90° Adapter	F109		
Filter Holder Front	F113	Filter No.:	
Filter Holder Back	F207	NA	
Short 90° Adapter	F-220		
Condenser	C-105		
T/C-well U-Adapter	U-204		
XAD Cartridge	X-116		
U-Adapter (A)	U-19		
3rd Impinger Mod-GBS	B-103	100 mls D.I. H_2O	NA
U-Adapter (B)	U-20		
4th Impinger GBS	B-151	100 mls D.I. H_2O	
U-Adapter (C)	U-21		
5th Impinger GBS	I-110	Empty	
U-Adapter (D)	U-22		
6th Impinger Mod-GBS	B-11	~200 g Silica gel	
Gooseneck	UH-4		

Component changes during run:

v5

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME

Train was used for: pre-run front Blank

Run No. pre-run - Blank
Sampling Location: Unit A,
Sampling Train No. 6
Sample Box No. 10196
Sample Box Recovery Date/Person 12-5-87 / Kinner
~~Nozzle~~/Probe/Sample Transfer Line Recovery Date/Persons 12-7-87

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)							
Initial Wt.(g)		NA		NA	N	A	
Net Wt. (g)							
Description/ Color	NA						
Sample Bottle Tare Wt. (g)	461.1g			461.1g			
Sample Number	13014	13015		13016			

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)	*	
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1g	NA	NA	461.1g
Sample Number	13013	no CATCH	13012	13013
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)	*			
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

* See PM notebook for TARE wts.

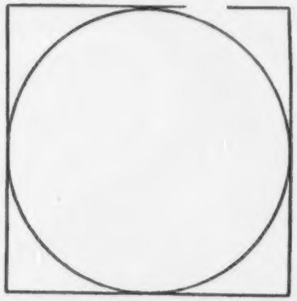
v6

FIELD ΊTA

RUN NO. 0 (Blank)
PROJECT NO. 4713L
PLANT MERC
DATE 12/3/87
SAMPLING LOCATION Stack Outlet
SAMPLE TYPE MMS Blank
OPERATOR Griffin
FILTER NO. N/A
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP

PROBE NO. 4
PROBE LENGTH AND TYPE 2' glass
SAMPLE BOX NO. 101 95
METER BOX NO. 3
TEMP. CONTROLLER NO. 1
TEMP. METER NO.
THERMOCOUPLE I.D. NO.
UMBILICAL CORD I.D. NO.
UMBILICAL CORD I.D. NO.
NOZZLE NO.

NOZZLE DIA.
ASSUMED MOISTURE %
METER ΔH @
METER CORRECTION
PITOT NO.
PITOT COEFFICIENT
BAROMETRIC PRESSURE 30.20
SITE TO BARO. ELEVATION (ft.) 20
CORRECTED B.P. (0.1 in./100 ft.) 30.18
STATIC PRESSURE



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK ≥3" H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

PITOT LEAK CHECK ≥3" H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	0913	1340	1342	1345	1348
VACUUM, In. Hg	≥15"	10"	≥15"	10"	≥15"
CFM	.023 ~~0417~~ NA	.025	.025	.025	.025
VOLUMES					
FINAL 328 558					
INITIAL					
DIFFERENCE					

328.283
328.433

329.000
328.885

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1350				
VACUUM, In. Hg	10"	≥15"		≥15"	
CFM	.025				
VOLUMES					
FINAL					
INITIAL					
DIFFERENCE					

INITIAL VOLUME 328.283
FINAL VOLUME
LEAK CHECK VOLUME
ADJUSTED FINAL VOLUME

COMMENTS

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. N/A
Sampling Location: Unit A, Outlet Blank
Sampling Train No. IV
Sample Box No. 10195
Sample Box Set Up Date/Person: 12-7-87 / Kinner SRK
Sample Box Leak Check: .002 cfm @ 15 in. Hg vacuum

Train to be used for:
Source Sample
Pre-Run Proof Blank
Post-Run Proof Blank
[✓ Location Blank]

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N/A		
Probe	4		
♀ Probe Blank-off	4		
♂ Glass Union Blank-off	N/A		
Glass Union	N/A		
Sample Transfer Line	N/A		
♀ S-T Line Blank-off	B1-4		
Cyclone	NA		
Flask	NA		
Long 90° Adapter	E-104		
Filter Holder Front	F-106	Filter No.:	
Filter Holder Back	F-204	NA	
Short 90° Adapter	E-209		
Condenser	C-112		N/A
T/C-well U-Adapter	U-216		
XAD Cartridge	X-134		N/A
U-Adapter (A)	U-122		
3rd Impinger Mod-GBS	I3-113	100 mls D.I. H_2O	N/A
U-Adapter (B)	U-147		
4th Impinger GBS	I-107	100 mls D.I. H_2O	N/A
U-Adapter (C)	U-124		
5th Impinger GBS	I-105	Empty	N/A
U-Adapter (D)	U-15		
6th Impinger Mod-GBS	I-1	~200 g Silica gel	N/A
Gooseneck	UH-8		

SRK

Component changes during run:

v7

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. X N/A
Sampling Location: Unit A, outlet
Sampling Train No. IV
Sample Box No. 10195
Sample Box Recovery Date/Person 12-8-87 Kuiner
~~Nozzle~~/Probe/Sample Transfer Line Recovery Date/Persons 12/8/87 Griffin March Cummins

Train was used for: outlet Smv Blank
Location Blank

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)							
Initial Wt.(g)							
Net Wt. (g)							
Description/ Color			NO WTS. TAKEN				
Sample Bottle Tare Wt. (g)	461.1			461.1			
Sample Number	15014	15015		15016			

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)		
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	NA	–	461.1
Sample Number	15010	–	15012	15014
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)				
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

v8

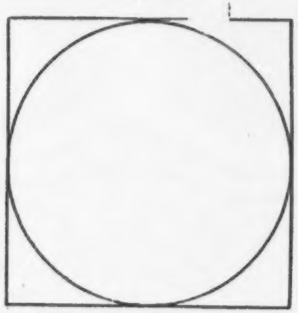
FIELD ATA

RUN NO. 1 Blank Train
PROJECT NO.
PLANT MERC
DATE 12/9/87
SAMPLING LOCATION Scrubber Inlet
SAMPLE TYPE Semi Vol. Train IV ④
OPERATOR Cummins / Klamm
FILTER NO.
RECORD DATA EVERY ______ MIN.
UMBILICAL/SAMPLER HOOKUP UH-1

Train #4

PROBE NO. 4
PROBE LENGTH AND TYPE 1.5 to 3 foot Glass
SAMPLE BOX NO. 10195
METER BOX NO.
TEMP. CONTROLLER NO.
TEMP. METER NO.
THERMOCOUPLE I.D. NO.
UMBILICAL CORD I.D. NO.
UMBILICAL CORD I.D. NO.
NOZZLE NO.

NOZZLE DIA.
ASSUMED MOISTURE %
METER ΔH @
METER CORRECTION
PITOT NO.
PITOT COEFFICIENT
BAROMETRIC PRESSURE
SITE TO BARO. ELEVATION (ft.)
CORRECTED B.P. (0.1 in./100 ft.)
STATIC PRESSURE



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK ≥3" H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

PITOT LEAK CHECK ≥3" H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	"PORT 1"		"Port 2"		"Port 3"
	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	1348	1348	1350	1350	1350
VACUUM, in. Hg	≥15"	15"	≥15"	15"	≥15"
CFM	.025	.03	.025	.025	.03
VOLUMES					
FINAL		651.61		651.82	
INITIAL		651.33		651.61	
DIFFERENCE					

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1350				
VACUUM, in. Hg	15"	≥15"		≥15"	
CFM	.03				
VOLUMES					
FINAL	652.03				
INITIAL	651.82				
DIFFERENCE					

v9

INITIAL VOLUME
FINAL VOLUME
LEAK CHECK VOLUME
ADJUSTED FINAL VOLUME

COMMENTS

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. ~~2~~ N/A
Sampling Location: Unit A, Inlet Bl
Sampling Train No. IV ④
Sample Box No. 10195
Sample Box Set Up Date/Person: 12-8-87 / Kinner
Sample Box Leak Check: 0.005 cfm @ 15 in. Hg-vacuum

Train to be used for:
Source Sample
Pre-Run Proof Blank
Post-Run Proof Blank
[✓ Location Blank]

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N/A		
Probe	4		
♀ Probe Blank-off	4		
♂ Glass Union Blank-off	4		
Glass Union	4		
Sample Transfer Line	4		
♀ S-T Line Blank-off	Bl-4		
Cyclone	Cy 109		
Flask	CF 108		
Long 90° Adapter	NA		
Filter Holder Front	F-106	Filter No.:	
Filter Holder Back	F-204	NA	
Short 90° Adapter	E-209		
Condenser	C-112		
T/C-well U-Adapter	U-216		
XAD Cartridge	X-121		
U-Adapter (A)	U-122		
3rd Impinger Mod-GBS	B-113	100 mls D.I. H_2O	N/A
U-Adapter (B)	U-147		
4th Impinger GBS	I-107	100 mls D.I. H_2O	
U-Adapter (C)	U-124		
5th Impinger GBS	I-105	Empty	
U-Adapter (D)	U-15		
6th Impinger Mod-GBS	~~I-1~~ I-313	200 g Silica gel	
Gooseneck	~~U-1-8~~ UH-1		

√10

Component changes during run:
SiO2 + Gooseneck Switched w/ Train 5 before Sampling begins

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. ~~[illegible]~~ N/A
Sampling Location: Unit A, ~~Outlet~~ Inlet
Sampling Train No. 4
Sample Box No. 10195
Sample Box Recovery Date/Person 12/9/87
~~Nozzle~~/Probe/Sample Transfer Line Recovery Date/Persons 12/9/87 Griffin March Cummins

Train was used for: Inlet SmV
Location Blank

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)	N.A		454.4				
Initial Wt.(g)		657.8	572.7	574.7	657.8	595.6	
Net Wt. (g)							
Description/ Color	NA						
Sample Bottle Tare Wt. (g)	461.1			461.1			
Sample Number	16014	16015		16016			

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)		
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1		—	
Sample Number	16013		16012	16013
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)				
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

✓11

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

~~Train to be used for:~~ ick
~~Source Sample~~
~~Pre-Run Proof Blank~~
[✓ Post-Run Proof Blank]
~~Location Blank~~

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 4
Sampling Location: Unit A, Inlet
Sampling Train No. 5
Sample Box No. 10284
Sample Box Set Up Date/Person: 12-13-87 Kinnes
Sample Box Leak Check: 0.005 cfm @ 15 in. Hg vacuum

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle			
Probe			
♀ Probe Blank-off			
♂ Glass Union Blank-off			
Glass Union			
Sample Transfer Line			
♀ S-T Line Blank-off	B1-5		
Cyclone	Cy 101		
Flask	CF 103		
Long 90° Adapter	NA		
Filter Holder Front	F-105	Filter No.:	
Filter Holder Back	F-201	NA	
Short 90° Adapter	E-207		
Condenser	C-109		
T/C-well U-Adapter	U-207		
XAD Cartridge	X-		
U-Adapter (A)	U-16		
3rd Impinger Mod-GBS	B-112	100 mls D.I. H_2O	
U-Adapter (B)	U-17		
4th Impinger GBS	B-10	100 mls D.I. H_2O	
U-Adapter (C)	U-18		
5th Impinger GBS	B-136	Empty	
U-Adapter (D)	U-101		
6th Impinger Mod-GBS	I-1	~200 g Silica gel	
Gooseneck	UH-8		

Component changes during run:

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 4
Sampling Location: Unit A, Inlet
Sampling Train No. 5
Sample Box No. 1028-1
Sample Box Recovery Date/Person 12-14-87
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-14-87

Train was used for:
~~[illegible]~~ SMV ✓
Post [illegible]

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)							
Initial Wt.(g)		644.0	585.5	613.5	494.3	652.1	
Net Wt. (g)							
Description/ Color		NO	WTS	TAKEN			
Sample Bottle Tare Wt. (g)	461.1			461.1			
Sample Number	1704	1705		1706			

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)	*	*
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	NA		461.1
Sample Number	1703		1702	1703
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)	*			*
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

* weigh @ MRI

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. 4

Sampling Location: Unit A, outlet

Sampling Train No. 6

Sample Box No. 10195

Sample Box Set Up Date/Person: 12-11-87 Kinner

Sample Box Leak Check: 0.003 cfm @ 15 in. Hg vacuum

~~Train to be used for:~~
~~Source Sample~~ OK
~~Pre-Run Proof Blank~~
[✓ Post-Run Proof Blank]
~~Location Blank~~

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle			
Probe			
♀ Probe Blank-off			
♂ Glass Union Blank-off			
Glass Union			
Sample Transfer Line			
♀ S-T Line Blank-off	BL-4		
Cyclone	NA		
Flask			
Long 90° Adapter	E-104		
Filter Holder Front	F-106	Filter No.: OK	
Filter Holder Back	F-204	~~H NA~~	
Short 90° Adapter	E-209		
Condenser	C-112		
T/C-well U-Adapter	U-216		
XAD Cartridge	X - ~~BK~~		
U-Adapter (A)	~~B-113~~ U-122		
3rd Impinger Mod-GBS	B-113	100 mls D.I. H_2O	
U-Adapter (B)	U-147		
4th Impinger GBS	I-107	100 mls D.I. H_2O	
U-Adapter (C)	U-124		
5th Impinger GBS	I-105	Empty	
U-Adapter (D)	U-15		
6th Impinger Mod-GBS	I-313	~200 g Silica gel	
Gooseneck	UH-1		

Component changes during run:

MODIFIED METHOD 5 TRAIN
SEMIVOLATILE ORGANICS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 4
Sampling Location: Unit A, outlet
Sampling Train No. 6
Sample Box No. 10195
Sample Box Recovery Date/Person 12-14-87 S. Kumer
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-14-87

Train was used for: ~~Inlet~~ ~~Source~~ Outlet
Rcvy Blks

BACK HALF RECOVERY

Impinger	Condenser	XAD	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt.(g)					483.0		
Initial Wt.(g)	~~NA~~	658.5	593.9	588.2	~~593.9~~	597.8	
Net Wt. (g)							
Description/ Color		NO	WAS	TAKEN			
Sample Bottle Tare Wt. (g)	461.1			461.1			
Sample Number	18014 ~~17014~~ uk	18015 ~~17015~~ uk		18016 ~~17016~~ uk			

Pour condensate in condenser outlet into XAD resin cartridge

Rinse Solvents	Acetone/ Hexane*	Acetone/ Hexane*
Components Rinsed:	Filter Support Filter Holder Back Short 90° Adapter Condenser T/C-well U-Adapter	3rd,4th,5th Impingers U-Adapters (A,B,C)
Sample Bottle Final Wt. (g)	*	
Net Wt. (g)		

FRONT HALF RECOVERY

Component	Nozzle/Probe Glass Union Sample Transfer Line	Cyclone/Flask (loose contents)	Filter	Long 90° Adapter Cyclone/Flask Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	~~461.1~~ uk NA	NA	461.1
Sample Number	18013 ~~17013~~ uk		~~17012~~ uk 18012	~~17013~~ 18013
Rinse Solvents	Acetone/Hexane*			Acetone/Hexane*
Sample Bottle Final Wt. (g)	*			
Net Wt. (g)				

* Acetone rinses (with Brushing) precede Hexane rinses.

* weigh @ MRI

APPENDIX D

PARTICULATE/METALS MM5 FIELD DATA AND CARBON DIOXIDE/OXYGEN M3 FIELD DATA

D.1	Run No. 1 Spray Dryer Inlet	D-2
D.2	Run No. 1 Baghouse Outlet	D-13
D.3	Run No. 2 Spray Dryer Inlet	D-24
D.4	Run No. 2 Baghouse Outlet	D-36
D.5	Run No. 3 Spray Dryer Inlet	D-48
D.6	Run No. 3 Baghouse Outlet	D-59
D.7	M3 Sampling and Orsat Analysis	D-70
D.8	Preliminary Velocity Traverse Data	D-83
D.9	Proof/Blank Trains Set-up/Recovery	D-86

D.1 Run No. 1 Spray Dryer Inlet

```
FILE NAME - R1PMIN                                              PROG.=VER 01/13/88 V2
RUN # - 1                                                       01-15-1988  16:12:44
LOCATION - MERC-INLET PARTICULATE/METALS
DATE - DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=                  430.900
Final Meter Volume (Cubic Feet)=                    506.400
Meter Factor=                                         1.016
Multiple leak checks, see end of printout                      Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                       76.693
Gas Volume (Dry Standard Cubic Feet)=                73.238

Barometric Pressure (in Hg)=                          29.85
Static Pressure (Inches H2O)=                         -8.00

Percent Oxygen=                                         8.6
Percent Carbon Dioxide=                                10.9
Moisture Collected (ml)=                              276.6
Percent Water=                                         15.1

Average Meter Temperature (F)=                           92
Average Delta H (in H2O)=                              0.78
Average Delta P (in H2O)=                             1.147
Average Stack Temperature (F)=                          374

Dry Molecular Weight=                                 30.09
Wet Molecular Weight=                                 28.26

Average Square Root of Delta P (in H2O)=             1.0690
% Isokinetic=                                          99.2

Pitot Coefficient=                                     0.86
Sampling Time (Minutes)=                              160.0
Nozzle Diameter (Inches)=                             0.184
Stack Axis #1 (Inches)=                                50.0
Stack Axis #2 (Inches)=                                47.9
Rectangular Stack
Stack Area (Square Feet)=                             16.62

Stack Velocity  (Actual, Feet/min)=                   4,752
Flow Rate (Actual, Cubic ft/min)=                    78,988
Flow rate (Standard, Wet, Cubic ft/min)=             48,906
Flow Rate (Standard, Dry, Cubic ft/min)=             41,521

Particulate Loading - Front Half

Particulate Weight (g)=                             13.9661     Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=              2.9367          3.3156      3.2331
Particulate Loading, Actual (gr/cu ft)=              1.5431
Emission Rate (lb/hr)=                              1044.97

No Back Half Analysis
```

```
                        * * METRIC UNITS * *
FILE NAME - R1PMIN
RUN # - 1                                             PROG.=VER 01/13/88 V2
LOCATION - MERC-INLET PARTICULATE/METALS              01-15-1988  16:13:12
DATE - 'DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=           12.201
Final Meter Volume (Cubic Meters)=             14.339
Meter Factor=                                   1.016
Multiple leak checks, see end of printout              Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=                2.172
Gas Volume (Dry Standard Cubic Meters)=         2.074

Barometric Pressure (mm Hg)=                      758
Static Pressure (mm H2O)=                        -203

Percent Oxygen=                                   8.6
Percent Carbon Dioxide=                          10.9
Moisture Collected (ml)=                        276.6
Percent Water=                                   15.1

Average Meter Temperature (C)=                     34
Average Delta H (mm H2O)=                        19.8
Average Delta P (mm H2O)=                        29.1
Average Stack Temperature (C)=                    190

Dry Molecular Weight=                           30.09
Wet Molecular Weight=                           28.26

Average Square Root of Delta P (mm H2O)=       5.3877
% Isokinetic=                                    99.2

Pitot Coefficient=                               0.86
Sampling Time (Minutes)=                        160.0
Nozzle Diameter (mm)=                            4.67
Stack Axis #1 (Meters)=                         1.270
Stack Axis #2 (Meters)=                         1.216
Rectangular Stack
Stack Area (Square Meters)=                     1.544

Stack Velocity  (Actual, m/min)=                1,448
Flow rate (Actual, Cubic m/min)=                2,237
Flow rate (Standard, Wet, Cubic m/min)=         1,385
Flow rate (Standard, Dry, Cubic m/min)=         1,176

Particulate Loading - Front Half

Particulate Weight (g)=                       13.9661    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=       6734.5         7603.5     7414.2
Particulate Loading, Actual (mg/cu m)=         3538.7
Emission Rate (kg/hr)=                         474.42

No Back Half Analysis
```

```
FILE NAME - R1PMIN                                      PROG.=VER 01/13/88 V2
RUN # - 1                                               01-15-1988  16:13:39
LOCATION - MERC-INLET PARTICULATE/METALS
DATE - DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Point #      Delta P     Delta H     Stack T      Meter T
            (in. H20)   (in. H20)     (F)      In(F)   Out(F)
  1           1.400        0.94       360        74       74
  2           1.450        0.95       384        76       74
  3           1.400        0.93       389        82       74
  4           1.200        0.81       381        87       76
  5           1.250        0.83       379        90       77
  6           1.250        0.83       379        94       78
  7           1.200        0.82       377        97       80
  8           1.180        0.82       378       100       80
  9           0.940        0.64       378       101       82
  10          1.150        0.78       374       102       84
  11          1.050        0.71       375       103       85
  12          1.020        0.70       374       104       86
  13          1.000        0.67       373       105       87
  14          0.930        0.63       372       105       88
  15          1.020        0.70       369       106       89
  16          1.050        0.72       368       106       90
  17          1.100        0.76       360        88       86
  18          1.080        0.72       371        91       86
  19          1.140        0.77       374        96       86
  20          1.150        0.78       374       100       86
  21          1.260        0.86       374       102       87
  22          1.260        0.87       377       104       88
  23          1.180        0.82       374       106       88
  24          1.140        0.77       374       107       88
  25          1.380        0.96       380       107       90
  26          1.060        0.71       380       108       90
  27          0.930        0.65       374       108       91
  28          0.940        0.64       372       108       91
  29          1.080        0.73       372       108       91
  30          1.150        0.80       369       108       92
  31          1.180        0.83       359       108       92
  32          1.180        0.82       374       108       92


Fraction                Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                           (g)        (g)       (g)       (g)
DRY CATCH                0.0000     0.0000    0.0000    0.0000
FILTER                  13.1104     1.0309    0.0001   12.0794

Fraction                Final Wt.  Tare Wt.    Vol.     Net Wt.
                           (g)        (g)      (ml)       (g)
PROBE RINSE            160.8689   158.9815    871.0    1.8867
IMPINGERS                0.0000     0.0000      0.0    0.0000
Probe Rinse Blank (mg/ml)=  0.0008
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
    0.0020    80.0000
    0.0030    80.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 1

Project Number 8910L0212

Date s/c ~~12/4/87~~ 12/9/87

Plant MERC

Sampling Location Scrubber Inlet - Metals Train #2

FIELD CREW

Crew Chief J. Surman

Testing Engineer S. Cummins

Assistant Testing Engineer S. Klamm.

Schliesser

Process Engineer

Other C. Kirner Lab.

M14

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC

Sampling Location Scrubber Inlet

Run No. 1

Date 12-9-87

Operator S Cummins

Train #2

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice in H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	% H_2O	
Barometric Pressure Corrected to Sampling Elevation − 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm + (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	$P_s\ P_m$	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head in H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in.		
Actual Nozzle Diameter, in.		
Reference Δp, in. H_2O		

Isokinetic sampling equation:

$$\text{Where:}\quad Vm_i = (K)(Tm + 460)\sqrt{\frac{\Delta P_s}{Ts + 460}}$$

$$K = \frac{5.168\,(Cp)(\theta i)(Mf)(Dn^2)}{PB}$$

Vm_i = Volume of the Meter per Sampling Interval, ft^3

K = Constant of Fixed and Assumed Parameters, Dimensionless

ΔPs = Velocity Head of S Pitot, in. H_2O

Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	θi	
Mole Fraction Dry Gas − (100 − % H_2O)/100	Mf	
Nozzle Diameter, in.	Dn	
5.168 (____)(____)(____)(____^{2}) / ____	K	

COMPUTER PRINTOUT

```
DELTA H CAL=1.894
B P=29.85
STATIC P=-9.2
CP=0.863
MIN/PNT=5.
AVG STK T=360.
AVG DELTA P=1.1
% O2=7.
% CO2=13.
M TEMP=85.
M RATE,CFM=0.5
CALC NZL D=  0.1915
NZL D= 0.1840
DRY MW=    30.36
WET MW=    28.50
```

8710

MERC

12/9/87

P/M train

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page.

m15

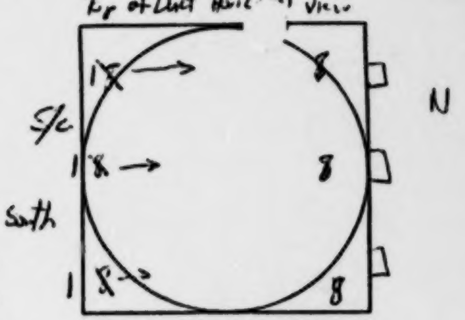
FIELI ATA

RUN NO. 1
PROJECT NO. 8910
PLANT MERC
DATE/12/7/87
SAMPLING LOCATION Scrubber Inlet
SAMPLE TYPE M5 metals
OPERATOR S. Cummins
FILTER NO. PM-3
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP UH-3

Train #2

PROBE NO. AL-1
PROBE LENGTH AND TYPE 8' Glass
SAMPLE BOX NO. 10236
METER BOX NO. 3
TEMP. CONTROLLER NO. A-1
TEMP. METER NO. 9516
THERMOCOUPLE I.D. NO. 6-2
UMBILICAL CORD I.D. NO. 725-5
UMBILICAL CORD I.D. NO. –
NOZZLE NO. N-12

NOZZLE DIA. 0.184
ASSUMED MOISTURE % 15
METER ΔH@ 1.894
METER CORRECTION 1.0158
PITOT NO. S-9
PITOT COEFFICIENT 0.863
BAROMETRIC PRESSURE 29.95
SITE TO BARO. ELEVATION (ft.) 100
CORRECTED B.P. (0.1 in./100 ft.) 5k ~~0.1~~ 29.85
STATIC PRESSURE ~~-9.2~~ in. H_2O
-8.0 ⇐ SPS
-8.0



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK $\geq 3''$ H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1150	17:04		1855		
PASS/FAIL		pass on impact side only just to check for plug at Dist.		pass		

PITOT LEAK CHECK $\geq 3''$ H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	11:45	16:50	17:09	1845	
VACUUM, in. Hg	≥15"	= 6"	≥15"	= 7"	≥15"
CFM	0.004	0.002	0.003	0.003	
VOLUMES					
FINAL		~~468.62~~			
INITIAL		468.45		506.63	
DIFFERENCE					

468.68
468.45
.23

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)					
VACUUM, in. Hg		≥15"		≥15"	
CFM					
VOLUMES					
FINAL					
INITIAL					
DIFFERENCE					

INITIAL VOLUME 430.80
FINAL VOLUME 506.63
LEAK CHECK VOLUME .23
ADJUSTED FINAL VOLUME 506.40

m16

COMMENTS

RUN NO. 1 Train #2 SAMPLING LOCATION Scrubber Inlet p. 1 of 2
DATE 12/9/87 PROJECT NO. 8910 OPERATOR S. Cummins

Part 1

TRAVERSE POINT NUMBER	SAMPLING TIME, min (0)	CLOCK TIME (24-hr.) (15:30)	GAS METER READING (V_m), ft³ INITIAL ~~430.5~~ 430.90 DESIRED	GAS METER READING ACTUAL	VELOCITY HEAD (Δp_s), in. H₂O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H₂O DESIRED	ORIFICE PRESSURE DIFFERENTIAL ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET (T_m in), °F	DRY GAS METER TEMPERATURE OUTLET (T_m out), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	Flex line Temp, °F
X 1-1	5	15:35	433.45	433.30	1.4	.92	.94	380	74	74	5	47	239	252	253	251
X 1-1	10	15:40	436.01	435.84	1.45	.93	.95	384	76	74	5	45	243	253	260	250
X 1-2	15	15:45	438.53	438.43	1.4*	.90	.93	389	82	74	5	48	228	251	257	251
X 1-2	20	15:50	440.90	440.83	1.20	.78	.81	381	87	76	4	49	226	250	255	249
X 1-3	25	15:55	443.32	443.31	1.25	.82	.83	379	90	77	4	50	222	250	253	248
X 1-3	30	16:00	445.75	445.71	1.25	.82	.83	379	94	78	4	52	222	250	252	247
X 1-4	35	16:05	448.15	448.12	1.20	.79	.82	377	97	80	4	52	223	249	251	242
X 1-4	40	1610	450.554	450.51	1.18	.78	.82	378	100	80	4	54	221	248	251	249
X 1-5	45	1615	452.67	452.68	.94	.62	.64	378	101	82	4	54	220	247	250	249
X 1-5	50	1620	455.04	455.04	1.15	.77	.78	374	102	84	4	55	220	248	250	249
X 1-6	55	1625	457.31	457.31	1.05	.70	.71	375	103	85	4	55	219	246	249	251
X 1-6	60	1630	459.55	459.57	1.02	.69	.70	374	104	86	4	56	219	246	249	250
X 1-7	65	1635	461.78	461.78	1.0	.67	.67	373	105	87	4	54	219	245	249	245
X 1-7	70	1640	463.93	463.92	.93	.63	.63	372	105	88	4	55	218	253	250	245
X 1-8	75	1645	466.18	466.15	1.02	.69	.70	369	106	89	4	54	218	253	250	236
X 1-8	80	1650	468.48	468.45	1.05	.71	.72	368	106	90	5	52	220	249	251	241
	80	17:18	initial M.V.	468.68												
2-1	85	17:23	470.99	470.95	1.1	.74	.76	368	88	86	5	50	256	252	242	250
2-1	90	1728	473.28	473.24	1.08	.72	.72	370	91	86	5	50	253	252	251	247
2-2	95	1733	475.63	475.60	1.14	.76	.77	374	96	86	5	54	253	250	258	244
2-2	100	1738	478.00	477.97	1.15	.77	.78	374	100	86	5	52	251	249	262	243
2-3	105	1743	480.49	480.46	1.26	.85	.86	374	102	87	5	48	244	249	262	246
2-3	110	1748	482.98	482.95	1.26	.85	.87	377	104	88	5	48	233	248	260	242
2-4	115	1753	485.40	385.40	1.18	.80	.82	374	106	88	5	49	227	248	256	242
2-4	120	1758	487.79	487.76	1.14	.77	.77	374	107	88	5	49	226	247	255	253
2-5	125	1803	490.40	490.37	1.38	.93	.96	380	107	90	6	50	226	246	258	252
2-5	130	1808	492.69	492.67	1.06	.71	.71	380	108	90	5	50	226	246	261	252

COMMENTS * 1.4/-7.0
ΔP / T.P.

D-9

M17

Revision [illegible]

RUN NO. 1 Train#2 SAMPLING LOCATION Scrubber Inlets p. 2 of 2
DATE 12-9-87 PROJECT NO. 8910 OPERATOR Slimmons

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL ______ DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m_{in}}$), °F	OUTLET ($T_{m_{out}}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	Flex Line Temp., °F	
2-6	135	1813	494.85	494.85	.93	.63	.65	374	108	91	5	52	216	252	252	251	
2-6	140	1818	497.02	497.02	.94	.64	.64	372	108	91	5	52	215	251	255	253	
2-7	145	1823	499.35	499.32	1.08	.73	.73	372	108	91	5	49	216	251	254	252	
2-7	150	1828	501.76	501.75	1.15	.79	.80	369	108	92	6	47	216	251	254	249	
2-8	155	1833	504.22	504.10	1.18	.82	.83	359	108	92	6	47	214	249	254	254	
2-8	160	1838	506.65	506.63	1.18	.80	.82	374	108	92	6	47	218	248	254	254	
	110		Initial M.Vol =														
3-1	11.5																
3-1																	
3-2																	
3-2																	
3-3																	
3-3																	
3-4																	
3-4																	
3-5																	
3-5																	
3-6																	
3-6																	
3-7																	
3-7																	
3-8																	
3-8																	

COMMENTS

m18

Revision 8-4-86

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Train to be used for:
[✓ Source Sample]
Pre-Run Proof Blank
Post-Run Proof Blank
Sampling Location Blank

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 1
Sampling Location: Unit A, Inlet metals
Sampling Train No. II
Sample Box No. 10286
Sample Box Set Up Date/Person: 12-7-87 / Kinner
Sample Box Leak Check: 0.006 cfm @ 15 in. Hg vacuum

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N-12		
Probe	2		
♀ Probe Blank-off	2		
♂ S-T Line Blank-off	2		
Glass Union	2		
Sample Transfer Line	2		
♀ S-T Line Blank-off	BL-2		
Long 90° Adapter	NA		
Cyclone	CY 107		
Flask	CF 105		
Filter Holder Front	F-104	Filter Number:	
Filter Holder Back	F-210	Pm-3	
Short 90° Adapter	E-211		
1st Impinger Mod-GBS	B-111	Empty	
U-Adapter (A)	U-4		
2nd Impinger GBS	B-4	100 mls 5% HNO_3/10% H_2O_2	
U-Adapter (B)	U-6		
3rd Impinger GBS	B-5	100 mls 5% HNO_3/10% H_2O_2	
U-Adapter (C)	U-7		
4th Impinger GBS	B-109	100 mls acidic $KMnO_4$	
U-Adapter (D)	U-8		
5th Impinger GBS	B-6	100 mls 0.5 N NaOH	
U-Adapter (E)	U-9		
6th Impinger Mod-GBS	B-150	~200g Silica gel	
Gooseneck	UH-3		

Components exchanged during run:

M24

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 1
Sampling Location: Unit A, Inlet
Sampling Train No. II
Sample Box No. 10286
Sample Box Recovery Date/Person 12/9/87 Kimmel
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12/9/87 March Gill/ Cummins

Train was used for:
Inlet metals
Source Sample

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)	681.0	658.2	600.7	604.1	627.2	644.6	
Initial Wt.(g)	491.4	604.3	583.7	602.4	623.4	634.0	
Net Wt. (g)	189.6	53.9	17.0	1.7	3.8	10.6	276.6
Description/ Color	NA	→	→	→	→	50% Spent	
Sample Bottle Tare Wt. (g)		461.1		461.1	461.1		
Sample Number		1007*		1008*	1009		
Rinse Solution		0.1N HNO_3		acid $KMnO_4$	D.I. H_2O		
Components Rinsed:		Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)		Impinger Adapt(C)	Impinger Adapt(D)		
Check pH¯2		✓					
Sample Bottle Final Wt. (g)		*					
Net Wt. (g)							

10.6
3.8
1.7
17.0
53.9
189.6
276.6

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter #3	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	461.1			461.1	461.1
Sample Number	1001	1002	1003	1004	1005	1006
Rinse Sol'n***	Acetone	0.1N HNO_3			Acetone	0.1N HNO_3
Ckeck pH¯2		✓				✓
Sample Bottle Final Wt. (g)	*					
Net Wt. (g)						

** Nozzles are not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

m25

D.2 Run No. 1 Baghouse Outlet

```
FILE NAME - R1PMOUT                                       PROG.=VER 01/13/88 V2
RUN # - 1                                                 01-15-1988  16:20:03
LOCATION - MERC-OUTLET PARTICULATE/METALS
DATE - 'DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=           330.670
Final Meter Volume (Cubic Feet)=             393.496
Meter Factor=                                  0.987
Multiple leak checks, see end of printout              Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                62.009
Gas Volume (Dry Standard Cubic Feet)=         61.044

Barometric Pressure (in Hg)=                   29.95
Static Pressure (Inches H2O)=                 -19.30

Percent Oxygen=                                  8.6
Percent Carbon Dioxide=                         10.9
Moisture Collected (ml)=                       262.3
Percent Water=                                  16.8

Average Meter Temperature (F)=                    77
Average Delta H (in H2O)=                       0.46
Average Delta P (in H2O)=                      0.690
Average Stack Temperature (F)=                   270

Dry Molecular Weight=                          30.09
Wet Molecular Weight=                          28.05

Average Square Root of Delta P (in H2O)=      0.8252
% Isokinetic=                                  106.1

Pitot Coefficient=                              0.87
Sampling Time (Minutes)=                       160.0
Nozzle Diameter (Inches)=                      0.181
Stack Axis #1 (Inches)=                         57.0
Stack Axis #2 (Inches)=                         50.0
Rectangular Stack
Stack Area (Square Feet)=                      19.79

Stack Velocity  (Actual, Feet/min)=            3,508
Flow Rate (Actual, Cubic ft/min)=             69,422
Flow rate (Standard, Wet, Cubic ft/min)=      47,899
Flow Rate (Standard, Dry, Cubic ft/min)=      39,837

Particulate Loading - Front Half

Particulate Weight (g)=                       0.0343     Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=       0.0087          0.0098    0.0095
Particulate Loading, Actual (gr/cu ft)=       0.0050
Emission Rate (lb/hr)=                          2.96

No Back Half Analysis
```

```
                         * * METRIC UNITS * *
FILE NAME - R1PMOUT                                        PROG.=VER 01/13/88 V2
RUN # - 1                                                  01-15-1988  16:20:31
LOCATION - MERC-OUTLET PARTICULATE/METALS
DATE - `DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=            9.363
Final Meter Volume (Cubic Meters)=             11.142
Meter Factor=                                   0.987
Multiple leak checks, see end of printout               Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=                1.756
Gas Volume (Dry Standard Cubic Meters)=         1.729

Barometric Pressure (mm Hg)=                      761
Static Pressure (mm H2O)=                         -490

Percent Oxygen=                                   8.6
Percent Carbon Dioxide=                          10.9
Moisture Collected (ml)=                        262.3
Percent Water=                                   16.8

Average Meter Temperature (C)=                     25
Average Delta H (mm H2O)=                        11.7
Average Delta P (mm H2O)=                        17.5
Average Stack Temperature (C)=                    132

Dry Molecular Weight=                           30.09
Wet Molecular Weight=                           28.05

Average Square Root of Delta P (mm H2O)=       4.1588
% Isokinetic=                                   106.1

Pitot Coefficient=                               0.87
Sampling Time (Minutes)=                        160.0
Nozzle Diameter (mm)=                            4.60
Stack Axis #1 (Meters)=                         1.448
Stack Axis #2 (Meters)=                         1.270
Rectangular Stack
Stack Area (Square Meters)=                     1.839

Stack Velocity  (Actual, m/min)=                1,069
Flow rate (Actual, Cubic m/min)=                1,966
Flow rate (Standard, Wet, Cubic m/min)=         1,356
Flow rate (Standard, Dry, Cubic m/min)=         1,128

Particulate Loading - Front Half                   --

Particulate Weight (g)=                        0.0343     Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=         19.9          22.4       21.9
Particulate Loading, Actual (mg/cu m)=           11.4
Emission Rate (kg/hr)=                           1.34

No Back Half Analysis
```

```
FILE NAME - R1PMOUT                                        PROG.=VER 01/13/88 V2
RUN # - 1                                                  01-15-1988  16:20:58
LOCATION - MERC-OUTLET PARTICULATE/METALS
DATE - `DECEMBER 9, 1987
PROJECT # - 8910-L-02-12

Point #        Delta P      Delta H     Stack T        Meter T
              (in. H2O)   (in. H2O)      (F)      In(F)   Out(F)
 1             1.000        0.72        270        64       64
 2             0.890        0.64        276        65       64
 3             0.800        0.57        282        69       64
 4             0.780        0.55        272        74       65
 5             0.800        0.53        269        78       65
 6             0.690        0.41        282        81       66
 7             0.720        0.44        266        84       67
 8             0.740        0.47        259        85       69
 9             0.700        0.42        279        86       70
 10            0.610        0.36        267        87       71
 11            0.570        0.37        270        88       72
 12            0.570        0.37        279        89       73
 13            0.470        0.30        264        89       74
 14            0.440        0.30        269        89       75
 15            0.500        0.34        270        89       75
 16            0.450        0.34        254        89       76
 17            0.770        0.52        270        75       73
 18            0.870        0.59        275        76       74
 19            0.850        0.59        270        80       74
 20            0.850        0.59        269        84       74
 21            0.880        0.61        273        86       74
 22            0.790        0.55        269        88       74
 23            0.800        0.56        270        89       74
 24            0.850        0.59        275        87       74
 25            0.640        0.44        268        88       74
 26            0.660        0.45        274        88       74
 27            0.610        0.40        271        88       74
 28            0.620        0.40        270        85       73
 29            0.570        0.36        274        84       73
 30            0.700        0.47        266        84       73
 31            0.450        0.29        250        85       73
 32            0.430        0.25        259        85       73


 Fraction              Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                         (g)        (g)        (g)        (g)
 DRY CATCH             0.0000     0.0000     0.0000     0.0000
 FILTER                1.0366     1.0134     0.0001     0.0231

 Fraction              Final Wt.  Tare Wt.    Vol.     Net Wt.
                         (g)        (g)       (ml)       (g)
 PROBE RINSE          165.6664   165.6550    224.0     0.0112
 IMPINGERS              0.0000     0.0000      0.0     0.0000
 Probe Rinse Blank (mg/ml)=  0.0008
 Impinger Blank (mg/ml)=  0.0000

 Multiple leak checks used.  Final readings for each segment are listed below

 Lk Rate (cfm) Time (min)
     0.0000    80.0000
     0.0010    80.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 1 (metals)

Project Number 8910L

Date 12/9/87

Plant MERC

Sampling Location F-F Outlet Train #3

FIELD CREW

Crew Chief Surman

Testing Engineer Griffin

Assistant Testing Engineer Soderberg

Process Engineer

Other

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC
Sampling Location FF Outlet
Run No. 1 (metals)

Date 12/9/81
Operator Griffin

Train #3

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice in H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	% H_2O	
Barometric Pressure Corrected to Sampling Elevation − 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm + (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	P_s/P_m	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head, in. H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in.		
Actual Nozzle Diameter, in.		
Reference, Δp, in. H_2O		

Isokinetic sampling equation:

$$\text{Where:}\quad Vm_i = (K)(Tm + 460)\sqrt{\frac{\Delta P_s}{Ts + 460}}$$

$$K = \frac{5.168\,(Cp)(\theta i)(Mf)(Dn^2)}{\sqrt{PB}}$$

Vm_i = Volume of the Meter per Sampling Interval, ft^3

K = Constant of Fixed and Assumed Parameters, Dimensionless

ΔPs = Velocity Head of S Pitot, in. H_2O

Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	θi	
Mole Fraction Dry Gas − (100 − % H_2O)/100	Mf	
Nozzle Diameter, in.	Dn	
5.168 (_____)(_____)(_____)(____^{2}) / ______	K	

COMPUTER PRINTOUT

```
T FAC U<=0.
DELTA H CAL=1.808
  P=29.65
  ATIC P=19.8
  =0.868
  N/PNT=5.
  G STK T=280.
  G DELTA P=0.8
  O2=5.
  CO2=14.8
  TEMP=70.
  RATE,CFM=0.5
 ALC NZL D=  0.1983
 ZL D= 0.1810
 RY MW=    30.56
WET MW=    28.68
DELTA H= 0.582
```

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page.

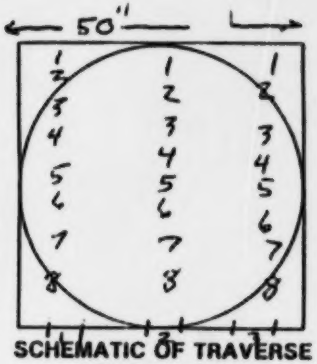
M47

FIELL ATA

RUN NO. 1
PROJECT NO. 8910 L
PLANT MERC
DATE 12/9/87
SAMPLING LOCATION ~~8~~ FF Outlet
SAMPLE TYPE MM5 (metals)
OPERATOR Griffin
FILTER NO. PM-9
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP UH-6
Train #3

PROBE NO. 6-1 (3)
PROBE LENGTH AND TYPE 6' glass
SAMPLE BOX NO. 10283
METER BOX NO. C (3)
TEMP. CONTROLLER NO. 8140
TEMP. METER NO. 9879
THERMOCOUPLE I.D. NO. TC 6-1
UMBILICAL CORD I.D. NO. U-25-1
UMBILICAL CORD I.D. NO. (Train 2)
NOZZLE NO. N-32

NOZZLE DIA. .181
ASSUMED MOISTURE % 15.0
METER ΔH@ 1.803
METER CORRECTION .987
PITOT NO. 5-8
PITOT COEFFICIENT .868
BAROMETRIC PRESSURE ~~27.85~~ 29.95
SITE TO BARO. ELEVATION (ft.) NA
CORRECTED B.P. (0.1 in./100 ft.) ~~27.85~~ 29.75
STATIC PRESSURE ~~19.8~~ SPS
-19.3



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK ≥3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1255	1910				
PASS/FAIL		pass				

PITOT LEAK CHECK ≥3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	1250	1700	1710	1845	1850
VACUUM, in. Hg	≥15"	5"	≥15"	5"	≥15"
CFM	.002	.000	.003	.001	.003
VOLUMES					
FINAL		361.667		393.874	
INITIAL		361.460		393.726	
DIFFERENCE		.207		.148	

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)					
VACUUM, in. Hg		≥15"		≥15"	
CFM					
VOLUMES					
FINAL					
INITIAL					
DIFFERENCE					

INITIAL VOLUME DG ~~330.607~~ 330.67
FINAL VOLUME 393.726
LEAK CHECK VOLUME .23 ~~.207~~ ~~.355~~ DG
ADJUSTED FINAL VOLUME ~~393.519~~ SPS 393.496

Revision 11/18/86

M28

COMMENTS

RUN NO. 1 (metals) Train #3
DATE 12/9/87

SAMPLING LOCATION EF Outlet
PROJECT NO. 5910 L

p. 1 of 2
OPERATOR Griffis

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL 330.67		VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O		STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F		
	0	1532	DESIRED	ACTUAL		DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F							
1-1	5	1537	332.99	332.84	1.0	.72	.72	270	64	64	5	43	268	244	262		
1-1	10	1542	335.17	335.20	.87	.64	.64	276	65	64	5	43	268	242	263		
1-2	15	1547	337.23	337.36	.80	.57	.57	282	69	64	4	45	246	244	260		
1-2	20	1552	339.30	339.48	.78	.57	.55	272	74	65	4	45	249	243	261		
1-3	25	1557	341.40	341.57	.80	.59	.53	269	78	65	4	46	247	242	262		
1-3	30	1602	343.34	343.45	.69	.50	.41	282	81	66	4	47	241	252	260		
1-4	35	1607	345.36	345.34	.72	.53	.44	266	84	67	4	47	242	251	259		
1-4	40	1612	347.42	347.38	.74	.56	.47	259	85	69	4	48	241	253	260		
1-5	45	1617	349.40	349.26	.70	.51	.42	279	86	70	4	48	227	253	254		
1-5	50	1622	351.26	351.04	.61	.45	.36	267	87	71	3	48	226	253	252		
1-6	55	1627	353.06	352.86	.57	.42	.37	270	88	72	3	50	227	250	251		
1-6	60	1632	354.86	354.68	.57	.42	.37	279	89	73	3	50	227	253	251		
1-7	65	1637	356.51	356.34	.47	.35	.30	264	89	74	3	50	223	251	248		
1-7	70	1642	358.10	357.98	.44	.33	.30	269	89	75	3	50	227	252	249		
1-8	75	1647	359.74	359.67	.50	.37	.34	270	89	75	3	50	226	253	248		
1-8	80	1652	361.42	361.46	.45	.34	.34	254	89	76	3	50	225	251	248		
		DG 1719 ~~1724~~	361.69														
2-1	85	1724	363.76	363.65	.77	.57	.52	270	75	73	4	46	224	250	240		
2-1	90	1729	365.96	365.87	.87	.64	.59	275	76	74	4	46	230	248	243		
2-2	95	1734	368.15	368.08	.85	.63	.59	270	80	74	4	47	229	246	246		
2-2	100	1739	370.35	370.29	.85	.63	.59	269	84	74	4	49	228	246	246		
2-3	105	1744	372.59	372.53	.88	.65	.61	273	86	74	5	49	228	247	248		
2-3	110	1749	374.71	374.67	.79	.59	.55	264	88	74	4	48	223	250	244		
2-4	115	1754	376.85	376.85	.80	.60	.56	276	89	74	4	47	229	250	250		
2-4	120	1759	379.05	379.05	.85	.63	.59	275	87	74	4	47	228	250	251		

COMMENTS

V_1 -21"
ΔP 1.1"
③ 1-1

V_1 -17"
ΔP 0.72"
③ 1-4.

V_1 =-18"
ΔP 0.62
③ 2-5

m29

Revision 5-4-86

RUN NO. 1 (metals)
DATE 12/9/87 Train #3
SAMPLING LOCATION FF Outlet
PROJECT NO. 8910L
p. 2 of 2
OPERATOR Griffi[illegible]

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (Vm), ft³ INITIAL ___ DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F		
	120	1759															
2-5	125	1804	380.97	381.03	.64	.48	.44	268	88	74	4	48	229	249	251		
2-5	130	1809	382.91	383.02	.66	.49	.45	274	88	74	4	48	229	250	251		
2-6	135	1814	384.77	384.91	.61	.45	.40	271	88	74	4	48	230	249	251		
2-6	140	1819	386.65	386.76	.62	.46	.40	270	85	73	4	48	232	248	251		
2-7	145	1824	388.41	388.54	.57	.42	.36	274	84	73	4	49	230	250	250		
2-7	150	1829	390.41	390.51	.70	.52	.47	266	84	73	4	48	229	247	258		
2-8	155	1834	392.06	392.18	.45	.34	.29	250	85	73	3	48	227	250	250		
2-8	160	1839	393.64	393.726	.43	.32	.25	259	85	73	3	48	227	246	249		
3-1	165																
3-1	170																
3-2	175																
3-2	180																
3-3	185																
3-3	190																
3-4	195																
3-4	200																
3-5	205																
3-5	210																
3-6	215																
3-6	220																
3-7	225																
3-7	230																
3-8	235																
3-8	240																

COMMENTS

M30

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. E-

Sampling Location: Unit A, outlet metals ~~Outlet Blank~~ ckk

Sampling Train No. ~~10288~~ ckk 12-8-87 ~~I~~ ckk III (3)

Sample Box No. 10288

Sample Box Set Up Date/Person: 12-7-87 / Kinner

Sample Box Leak Check: 0.004 cfm @ 15 in. Hg vacuum

Train to be used for:
[✓ Source Sample]
Pre-Run Proof Blank
Post-Run Proof Blank
~~Sampling Location Blank~~

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N-32		
Probe	3	ql	
♀ Probe Blank-off	3		
♂ S-T Line Blank-off	N/A		
Glass Union	N/A		
Sample Transfer Line	N/A		
♀ S-T Line Blank-off	BL-1		
Long 90° Adapter	NA		
Cyclone	Cy109		
Flask	CF108		
Filter Holder Front	F-109	Filter Number:	
Filter Holder Back	F-1	Pm-9	
Short 90° Adapter	E-1		
1st Impinger Mod-GBS	B-1	Empty	
U-Adapter (A)	U-140		
2nd Impinger GBS	B-2	100 mls	
U-Adapter (B)	U-2	5% HNO_3/10% H_2O_2	
3rd Impinger GBS	B-3	100 mls	
U-Adapter (C)	U-3	5% HNO_3/10% H_2O_2	
4th Impinger GBS	I-102	100 mls	
U-Adapter (D)	U-115	acidic $KMnO_4$	
5th Impinger GBS	B-107	100 mls	
U-Adapter (E)	U-5	0.5 N NaOH	
6th Impinger Mod-GBS	B-121	~200g Silica gel	
Gooseneck	UH-6		

Components exchanged during run:

THIS TRAIN WAS CHANGED TO TRAIN 3 ON 1st RUN DAY

m36

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME

Train was used for:
outlet metals
Source sample

Run No. 1
Sampling Location: Unit A, outlet
Sampling Train No. III
Sample Box No. 10288
Sample Box Recovery Date/Person 12-9/87 B. Kinner
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12/9/87 Mosch
Cummins

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)	728.4	622.1	600.7	620.0	581.2	658.6	
Initial Wt. (g)	510.9	591.9	597.4	618.7	579.8	650.8	
Net Wt. (g)	217.5	30.2	3.3	1.3	1.4	8.6	262.3
Description/ Color	NA	→				50% Spent	
Sample Bottle Tare Wt. (g)		461.1		461.1	461.1		
Sample Number		1023 ~~1007 BBK~~		1024 ~~1008 BBK~~	1025 ~~1009 BBK~~		
Rinse Solution		0.1N HNO_3		acid $KMnO_4$	D.I. H_2O		
Components Rinsed:	Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)			Impinger Adapt(C)	Impinger Adapt(D)		
Check pH˜2		✓					
Sample Bottle Final Wt. (g)	*						
Net Wt. (g)							

217.5
30.2
3.3
1.3
1.4
8.6
262.3

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter 9	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	461.1			461.1	461.1
Sample Number	1017 ~~1001 BBK~~	1018 ~~1002 BBK~~	NA ~~1003 BBK~~	1020 ~~1004 BBK~~	~~1005 BBK~~	1022 ~~1006 BBK~~
Rinse Sol'n***	Acetone	0.1N HNO_3			Acetone 1021	0.1N HNO_3
Ckeck pH˜2		✓				✓
Sample Bottle Final Wt. (g)						
Net Wt. (g)						

** Nozzles are not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

* Wt @ MRI

M37

D.3 Run No. 2 Spray Dryer Inlet

```
FILE NAME - R2PMIN
RUN # - 2                                          PROG.=VER 01/13/88 V2
LOCATION - MERC-INLET METALS                       01-15-1988  16:31:35
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=              506.900
Final Meter Volume (Cubic Feet)=                622.450
Meter Factor=                                     1.016
Multiple leak checks, see end of printout
Net Meter Volume (Cubic Feet)=                  117.376   Leak Correction=  0.0000
Gas Volume (Dry Standard Cubic Feet)=           112.203

Barometric Pressure (in Hg)=                      29.64
Static Pressure (Inches H2O)=                     -8.70

Percent Oxygen=                                     8.5
Percent Carbon Dioxide=                            11.0
Moisture Collected (ml)=                          426.4
Percent Water=                                     15.2

Average Meter Temperature (F)=                       88
Average Delta H (in H2O)=                          0.81
Average Delta P (in H2O)=                         1.182
Average Stack Temperature (F)=                      367

Dry Molecular Weight=                             30.10
Wet Molecular Weight=                             28.26

Average Square Root of Delta P (in H2O)=         1.0845
% Isokinetic=                                     100.1

Pitot Coefficient=                                 0.86
Sampling Time (Minutes)=                          240.0
Nozzle Diameter (Inches)=                         0.184
Stack Axis #1 (Inches)=                            50.0
Stack Axis #2 (Inches)=                            47.9
Rectangular Stack
Stack Area (Square Feet)=                         16.62

Stack Velocity  (Actual, Feet/min)=               4,822
Flow Rate (Actual, Cubic ft/min)=                80,162
Flow rate (Standard, Wet, Cubic ft/min)=         49,595
Flow Rate (Standard, Dry, Cubic ft/min)=         42,066

Particulate Loading - Front Half

Particulate Weight (g)=                         19.0425   Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=          2.6136        2.9272    2.8512
Particulate Loading, Actual (gr/cu ft)=          1.3710
Emission Rate (lb/hr)=                           942.22

No Back Half Analysis
```

```
                    * * METRIC UNITS * *
FILE NAME - R2PMIN                                          PROG.=VER 01/13/88 V2
RUN # - 2                                                   01-15-1988  16:32:02
LOCATION - MERC-INLET METALS
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=            14.353
Final Meter Volume (Cubic Meters)=              17.625
Meter Factor=                                    1.016
Multiple leak checks, see end of printout                 Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=                 3.324
Gas Volume (Dry Standard Cubic Meters)=          3.177

Barometric Pressure (mm Hg)=                       753
Static Pressure (mm H2O)=                         -221

Percent Oxygen=                                    8.5
Percent Carbon Dioxide=                           11.0
Moisture Collected (ml)=                         426.4
Percent Water=                                    15.2

Average Meter Temperature (C)=                      31
Average Delta H (mm H2O)=                         20.6
Average Delta P (mm H2O)=                         30.0
Average Stack Temperature (C)=                     186

Dry Molecular Weight=                            30.10
Wet Molecular Weight=                            28.26

Average Square Root of Delta P (mm H2O)=        5.4658
% Isokinetic=                                    100.1

Pitot Coefficient=                                0.86
Sampling Time (Minutes)=                         240.0
Nozzle Diameter (mm)=                             4.67
Stack Axis #1 (Meters)=                          1.270
Stack Axis #2 (Meters)=                          1.216
Rectangular Stack
Stack Area (Square Meters)=                      1.544

Stack Velocity  (Actual, m/min)=                 1,470
Flow rate (Actual, Cubic m/min)=                 2,270
Flow rate (Standard, Wet, Cubic m/min)=          1,404
Flow rate (Standard, Dry, Cubic m/min)=          1,191

Particulate Loading - Front Half

Particulate Weight (g)=                        19.0425     Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=        5993.6          6712.8    6538.5
Particulate Loading, Actual (mg/cu m)=          3143.9
Emission Rate (kg/hr)=                          427.77

No Back Half Analysis
```

```
FILE NAME - R2PMIN                                        PROG.=VER 01/13/88 V2
RUN # - 2                                                 01-15-1988  16:32:30
LOCATION - MERC-INLET METALS
DATE - DECEMBER 10,1987
PROJECT # - 8310-L-02-12

Point #       Delta P    Delta H     Stack T       Meter T
             (in. H2O)  (in. H2O)     (F)     In(F)   Out(F)
  1           1.350       0.88        370       70      70
  2           1.350       0.88        367       70      69
  3           1.350       0.87        369       74      69
  4           1.350       0.88        370       80      70
  5           1.300       0.86        373       85      72
  6           1.350       0.90        373       88      73
  7           1.150       0.76        368       91      74
  8           1.300       0.88        364       94      76
  9           1.150       0.77        367       95      76
 10           1.200       0.80        369       97      78
 11           1.250       0.84        367       98      79
 12           1.150       0.79        362       99      80
 13           1.150       0.78        363       99      82
 14           1.200       0.82        361      100      83
 15           1.200       0.83        364      101      84
 16           1.050       0.73        363      102      84
 17           1.200       0.83        368       87      82
 18           1.200       0.80        366       86      82
 19           1.320       0.88        369       90      82
 20           1.320       0.88        369       95      82
 21           1.500       1.10        369       98      83
 22           1.600       1.20        369      100      84
 23           1.450       1.00        377      102      84
 24           1.450       1.03        373      103      85
 25           1.200       0.82        369      104      85
 26           1.350       0.94        368      104      86
 27           1.200       0.83        369      105      87
 28           1.150       0.81        370      105      88
 29           1.000       0.70        370      105      88
 30           0.940       0.67        365      104      88
 31           1.000       0.71        363      104      88
 32           0.970       0.68        361      104      88
 33           0.970       0.65        368       80      79
 34           1.100       0.74        362       80      79
 35           0.930       0.63        361       85      78
 36           0.910       0.61        361       89      78
 37           0.930       0.63        365       92      79
 38           0.930       0.62        366       94      79
 39           0.940       0.63        366       95      80
 40           1.020       0.69        365       97      80
```

```
FILE NAME - R2PMIN                                          PROG.=VER 01/13/88 V2
RUN # - 2                                                   01-15-1988  16:32:58
LOCATION - MERC-INLET METALS
DATE - DECEMBER 10,1987
PROJECT # - 8910-L-02-12

 41          1.180       0.82       362       98        81
 42          1.200       0.83       364      100        82
 43          1.250       0.87       373      101        83
 44          1.200       0.84       374      102        84
 45          1.230       0.85       377      103        84
 46          1.100       0.77       370      104        85
 47          1.060       0.75       364      105        86
 48          1.080       0.76       362      105        86


Fraction              Final Wt. Tare Wt. Blank Wt. Net Wt.
                         (g)       (g)       (g)       (g)
DRY CATCH              0.0000    0.0000    0.0000    0.0000
FILTER                18.0076    1.0333    0.0001   16.9742

Fraction              Final Wt. Tare Wt.   Vol.     Net Wt.
                         (g)       (g)      (ml)      (g)
PROBE RINSE          157.3419  155.2731   709.0    2.0683
IMPINGERS              0.0000    0.0000     0.0    0.0000
Probe Rinse Blank (mg/ml)=  0.0008
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
    0.0020   80.0000
    0.0020   80.0000
    0.0020   80.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 2 Metals Project Number 8910

Date 12/10/87

Plant MBRC.

Sampling Location ~~Stn~~ Scrubber Inlet Train #2

FIELD CREW

Crew Chief J. Surman

Testing Engineer S. Cummins

Assistant Testing Engineer S. Klamm

Schliesser

Process Engineer

Other LAb L. Kinnie

m38

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC.
Sampling Location Scrubber Inlet.
Run No. 2

Date 12/10/87
Operator S. Cummins

Train #2

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice in H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	$\% H_2O$	
Barometric Pressure Corrected to Sampling Elevation – 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm – (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	P_s/P_m	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head in H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in		
Actual Nozzle Diameter, in.		
Reference Δp, in. H_2O		

Isokinetic sampling equation:

$$\text{Where: } Vm_i = (K)(Tm + 460)\sqrt{\frac{\Delta P_s}{Ts + 460}}$$

$$K = \frac{5.168\,(Cp)\,(\Theta i)\,(Mf)\,(Dn^2)}{PB}$$

Vm_i = Volume of the Meter per Sampling Interval, ft^3
K = Constant of Fixed and Assumed Parameters, Dimensionless
ΔPs = Velocity Head of S Pitot, in. H_2O
Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval Minutes	Θi	
Mole Fraction Dry Gas = (100 – % H_2O)/100	Mf	
Nozzle Diameter, in	Dn	
5.168 (____)(____)(____)(___²) / ____	K	

COMPUTER PRINTOUT

12/10/87

```
 H20=15.15
 FACTOR=1.0158
ELTA H CAL=1.894
 P=29.64
TATIC P=-9.
P=0.863
IN/PNT=5.
VG STK T=374.
VG DELTA P=1.15
 02=8.
 C02=11.
 TEMP=95.
 RATE,CFM=0.5
ALC NZL D=  0.1878
ZL D= 0.1840
DRY MW=    30.08
```

8910
S. Cummins
MERC
Run 2
metals

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page.

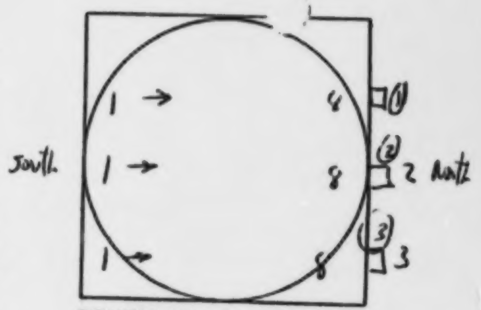
FIELD DATA

RUN NO. 2
PROJECT NO. 8910 L
PLANT MERC.
DATE 12/10/87
SAMPLING LOCATION Scrubber Inlet.
SAMPLE TYPE MS Metals.
OPERATOR S. Cummins
FILTER NO. 10
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP U#9

Train #2

PROBE NO. AL-1
PROBE LENGTH AND TYPE 8 foot Glass
SAMPLE BOX NO. N287
METER BOX NO. 3
TEMP. CONTROLLER NO. A-1
TEMP. METER NO. 9516
THERMOCOUPLE I.D. NO. 6-2
UMBILICAL CORD I.D. NO. U-25-5
UMBILICAL CORD I.D. NO. –
NOZZLE NO. N-12

NOZZLE DIA. 0.184
ASSUMED MOISTURE % 15.1
METER ΔH@ 1.894
METER CORRECTION 1.0158
PITOT NO. S-9
PITOT COEFFICIENT 0.863
BAROMETRIC PRESSURE 29.74
SITE TO BARO. ELEVATION (ft.) 100 ft
CORRECTED B.P. (0.1 in./100 ft.) 29.64
STATIC PRESSURE ~~-8.0~~ -8.7" H.



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK ≥ 3" H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	9:38	1617 positive side only	1619.			
PASS/FAIL		pass				

PITOT LEAK CHECK ≥ 3" H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	0938	1412	1420	15:57	16:28
VACUUM, in. Hg	≥15"	= 4"	≥15"	= 5"	≥15"
CFM	0.006	0.002	0.006	0.002	0.005
VOLUMES					
FINAL		546.30		586.15	
INITIAL		546.09		586.00	
DIFFERENCE		.21		.15	

Non sampled volume —

.21
.15
.36

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	18:02				
VACUUM, in. Hg	= 6"	≥15"		≥15"	
CFM	0.002				
VOLUMES					
FINAL					
INITIAL					
DIFFERENCE					

INITIAL VOLUME 506.90
FINAL VOLUME 622.81
LEAK CHECK VOLUME 0.36
ADJUSTED FINAL VOLUME 622.45

m40

COMMENTS

Revision 11/18/86

RUN NO. 2 Train #2
DATE 12/10/87
SAMPLING LOCATION Scrubber Inlet – Metals ; Train #2
PROJECT NO. 8710C
p. 1 of 2
OPERATOR S. Cummins

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL 506.90 DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	Flex Line Temp °F	
	0	12:50															
1-1	5	12:55	509.39	509.39	1.35	.87	.88	370	70	70	2	45	225	233	242	242	
1-1	10	13:00	511.89	511.90	1.35	.87	.88	367	70	69	2	45	225	244	248	245	
1-2	15	13:05	514.37	514.37	1.35	.87	.87	369	74	69	2	47	224	244	251	245	
1-2	20	1310	516.89	516.86	1.35*	.88	.88	370	80	70	3	47	225	243	254	244	
1-3	25	1315	519.36	519.36	1.30	.85	.86	373	85	72	3	48	225	243	256	244	
1-3	30	1320	521.89	521.86	1.35	.59	.90	373	88	73	3	48	223	242	256	243	
1-4	35	1325	524.25	524.22	1.15	.76	.76	368	91	74	3	46	223	241	256	243	
1-4	40	1330	526.77	526.77	1.30*	.87	.88	364	94	76	3	46	216	247	254	243	
1-5	45	1335	529.14	529.15	1.15	.77	.77	367	95	77	3	46	217	246	253	250	
1-5	50	1340	531.56	531.56	1.20	.80	.80	369	97	78	3	46	217	247	252	249	
1-6	55	1345	534.04	534.00	1.25	.84	.84	367	98	79	3	47	217	247	252	247	
1-6	60	1350	536.44	536.44	1.15	.78	.79	362	99	80	3	45	217	247	250	247	
1-7	65	1355	538.83	538.82	1.15	.78	.78	363	99	82	3	45	217	247	250	250	
1-7	70	1400	541.29	541.28	1.20	.81	.82	361	100	83	3	45	217	246	249	249	
1-8	75	1405	543.74	543.74	1.20	.81	.83	364	101	84	3	46	216	247	249	246	
1-8	80	1410	546.04	546.09	1.05	.71	.73	363	102	84	3	46	217	247	249	247	
	80	14:35	initial m.w.	546.30	—												
2-1	85	14:40	548.71	548.80	1.20	.80	.83	368	87	82	3	48	214	246	248	243	
2-1	90	1445	551.12	551.15	1.20	.80	.80	366	86	82	3	49	253	248	260	243	
2-2	95	1450	553.66	553.66	1.32	.88	.88	369	90	82	4	45	232	246	245	247	
2-2	100	1455	556.21	556.16	1.32	.88	.88	369	95	82	4	45	232	245	246	245	
2-3	105	1500	558.94	558.85	1.50	1.01	1.10	369	98	83	4	245	230	246	247	249	
2-3	110	1505	561.76	561.76	1.60	1.08	1.20	369	100	84	4	46	231	244	246	250	
2-4	115	1510	564.44	564.41	1.45*	.97	1.00	377	102	84	4	46	230	244	247	249	
2-4	120	1515	567.13	567.13	1.45	.98	1.03	373	103	85	4	44	233	246	249	243	
2-5	125	1520	569.59	569.59	1.20	.81	.82	369	104	85	4	44	230	244	248	242	
2-5	130	1525	572.20	572.20	1.35	.92	.94	369	104	86	4	45	231	245	248	245	

COMMENTS
*-7" Total Pressure @ ΔP 1.35
x-8" T.P @ ΔP 1.30 @ 13:28 hrs
x-8" T.P @ ΔP 1.45 @ 15:10 hrs

M41

RUN NO. 2 Train #2
DATE 12/10/87
SAMPLING LOCATION Scrubber Inlet, - Metals Train #2
PROJECT NO. 89106
P. 2 of 2
OPERATOR S. Cushmmins

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL DESIRED	GAS METER READING ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	Flex Line Temp	
2-6	135	1530	574.66	574.64	1.20	.81	.83	369	105	87	4	46	232	245	251	242	
2-6	140	1535	577.08	577.01	1.15	.78	.81	370	105	88	4	46	231	245	249	245	
2-7	145	1540	579.32	579.31	1.00	.68	.70	370	105	88	4	46	231	246	250	244	
2-7	150	1545	581.51	581.51	.94	.64	.67	365	104	88	4	43	231	245	251	244	
2-8	155	1550	583.77	583.77	1.00	.68	.71	363	104	88	4	43	230	243	249	243	
2-8	160	1555	585.99	586.00	.97	.66	.68	361	104	88	4	43	230	243	250	[illegible]	
	160	16:40	in.final M.Vol =	586.15	—	—	—	—	—	—	—	—	—	—			
3-1	165	1645	588.30	588.30	.97	.64	.65	368	80	79	4	48	241	242	[illegible]	[illegible]	
3-1	170	1650	590.60	590.60	1.1	.73	.74	362	80	79	4	44	238	249	243	[illegible]	
3-2	175	1655	592.72	592.73	.93	.62	.63	361	85	78	4	46	248	249	252	248	
3-2	180	1700	594.83	594.83	.91	.61	.61	361	89	78	4	47	248	249	254	250	
3-3	185	1705	596.96	596.96	.93	.62	.63	365	92	79	4	47	247	250	258	250	
3-3	190	1710	599.10	599.10	.93	.62	.62	366	94	79	5	44	244	249	254	254	
3-4	195	1715	601.25	601.25	.94	.63	.63	366	95	80	5	42	241	249	255	250	
3-4	200	1720	603.49	603.48	1.02	.68	.69	365	97	80	5	41	243	248	259	249	
3-5	205	1725	605.92	605.92	1.18	.80	.82	362	98	81	5	42	238	250	256	251	
3-5	210	1730	608.37	608.35	1.20	.81	.83	364	100	82	5	43	235	249	255	250	
3-6	215	1735	610.86	610.86	1.25	.84	.87	373	101	83	5	42	235	248	255	249	
3-6	220	1740	613.30	613.30	1.20	.80	.84	374	102	84	5	41	234	249	255	249	
3-7	225	1745	615.77	615.76	1.23	.82	.85	377	103	84	5	42	235	249	257	255	
3-7	230	1750	618.12	618.10	1.10	.74	.77	370	104	85	5	43	225	251	249	255	
3-8	235	1755	620.44	620.44	1.06	.72	.75	364	105	86	5	44	224	249	250	252	
3-8	240	1800	622.79	622.81	1.08	.74	.76	362	105	86	5	44	234	249	250	251	

COMMENTS

1.15 ΔP = 8" T.P. @ 1535 hrs
.99 ΔP = 7" T.P. @ 1543 hrs
.95 ΔP = 8" T.P. @ 1703 hrs
1.25 ΔP = 9" T.P. @ 1732 hrs

[illegible]

MODIFIED METHOD 5 TRAIN

OK

PARTICULATE/METALS SAMPLING

FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. 2

Sampling Location: Unit A, Inlet metal

Sampling Train No. 2

Sample Box No. 16287

Sample Box Set Up Date/Person: 12-9-87 / Kinner

Sample Box Leak Check: .009 cfm @ 15 in. Hg vacuum

Train to be used for:
[✓ Source Sample]
Pre-Run Proof Blank
Post-Run Proof Blank
Sampling Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N-12		
Probe	2		
ø Probe Blank-off	2		
ø S-T Line Blank-off	2		
Glass Union	2		
Sample Transfer Line	2		
ø S-T Line Blank-off	BL-2		
Long 90° Adapter	NA		
Cyclone	CY-109		
Flask	CF-108		
Filter Holder Front	F-207	Filter Number:	
Filter Holder Back	F-7	~~NA~~ 10	
Short 90° Adapter	E-2		
1st Impinger Mod-GBS	B-20	Empty	
U-Adapter (A)	U-11		
2nd Impinger GBS	B-118	100 mls	
U-Adapter (B)	U-25	5% HNO_3/10% H_2O_2	
3rd Impinger GBS	I-217	100 mls	
U-Adapter (C)	U-26	5% HNO_3/10% H_2O_2	
4th Impinger GBS	B-122	100 mls	
U-Adapter (D)	U-27	acidic $KMnO_4$	
5th Impinger GBS	B-7	100 mls	
U-Adapter (E)	U-28	0.5 N NaOH	
6th Impinger Mod-GBS	I-310	~200g Silica gel	
Gooseneck	UH-9		

Components exchanged during run:

previously train 1

m 49

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME

Train was used for: Inlet metals
Source Sample

Run No. 2
Sampling Location: Unit A, Inlet
Sampling Train No. 2
Sample Box No. 10287
Sample Box Recovery Date/Person 12-10-87
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-10-87 Masch

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)	805.3	642.0	601.5	574.1	555.7	606.7	
Initial Wt.(g)	477.7	571.6	586.5	575.4	553.3	594.0	
Net Wt. (g)	327.6	70.4	14.6	-1.3	2.4	12.7	426.4
Description/ Color	NA				>	SO3 Spec	
Sample Bottle Tare Wt. (g)		461.1		461.1	461.1		
Sample Number		2007*		2008*	2009		
Rinse Solution		0.1N HNO$_3$		acid KMnO$_4$	D.I. H$_2$O		
Components Rinsed:		Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)		Impinger Adapt(C)	Impinger Adapt(D)		
Check pH~2							
Sample Bottle Final Wt. (g)		*					
Net Wt. (g)							

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter 10	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	461.1			461.1	461.1
Sample Number	2001	2002	HK ~~10~~ 2003	2004	2005	2006
Rinse Sol'n***	Acetone	0.1N HNO$_3$			Acetone	0.1N HNO$_3$
Ckeck pH~2		✓				✓
Sample Bottle Final Wt. (g)	*					
Net Wt. (g)						

** Nozzles ~~are~~ not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

* weigh @ MRI

M50

D.4 Run No. 2 Baghouse Outlet

```
FILE NAME - R2PMOUT                                          PROG.=VER 01/13/88 V2
RUN # - 2                                                    01-15-1988  16:37:54
LOCATION - MERC-OUTLET PARTICULATE/METALS
DATE - DECEMBER 10, 1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=              394.070
Final Meter Volume (Cubic Feet)=                493.080
Meter Factor=                                     0.987
Multiple leak checks, see end of printout                 Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                   97.723
Gas Volume (Dry Standard Cubic Feet)=            95.976

Barometric Pressure (in Hg)=                      29.74
Static Pressure (Inches H2O)=                    -20.10

Percent Oxygen=                                     8.6
Percent Carbon Dioxide=                            10.9
Moisture Collected (ml)=                          397.5
Percent Water=                                     16.3

Average Meter Temperature (F)=                       75
Average Delta H (in H2O)=                          0.52
Average Delta P (in H2O)=                         0.763
Average Stack Temperature (F)=                      271

Dry Molecular Weight=                             30.09
Wet Molecular Weight=                             28.11

Average Square Root of Delta P (in H2O)=         0.8677
% Isokinetic=                                     105.8

Pitot Coefficient=                                 0.87
Sampling Time (Minutes)=                          240.0
Nozzle Diameter (Inches)=                         0.181
Stack Axis #1 (Inches)=                            57.0
Stack Axis #2 (Inches)=                            50.0
Rectangular Stack
Stack Area (Square Feet)=                         19.79

Stack Velocity  (Actual, Feet/min)=               3,705
Flow Rate (Actual, Cubic ft/min)=                73,323
Flow rate (Standard, Wet, Cubic ft/min)=         50,039
Flow Rate (Standard, Dry, Cubic ft/min)=         41,871

Particulate Loading - Front Half

Particulate Weight (g)=                          0.0804   Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=          0.0129        0.0146     0.0142
Particulate Loading, Actual (gr/cu ft)=          0.0074
Emission Rate (lb/hr)=                             4.63

No Back Half Analysis
```

```
                         * * METRIC UNITS * *
FILE NAME - R2PMOUT
RUN # - 2                                                      PROG.=VER 01/13/88 V2
LOCATION - MERC-OUTLET PARTICULATE/METALS                      01-15-1988  16:38:22
DATE - DECEMBER 10, 1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=            11.158
Final Meter Volume (Cubic Meters)=              13.962
Meter Factor=                                    0.987
Multiple leak checks, see end of printout                  Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=                 2.767
Gas Volume (Dry Standard Cubic Meters)=          2.718

Barometric Pressure (mm Hg)=                       755
Static Pressure (mm H2O)=                         -511

Percent Oxygen=                                    8.6
Percent Carbon Dioxide=                           10.9
Moisture Collected (ml)=                         397.5
Percent Water=                                    16.3

Average Meter Temperature (C)=                      24
Average Delta H (mm H2O)=                         13.1
Average Delta P (mm H2O)=                         19.4
Average Stack Temperature (C)=                     133

Dry Molecular Weight=                            30.09
Wet Molecular Weight=                            28.11

Average Square Root of Delta P (mm H2O)=        4.3733
% Isokinetic=                                    105.8

Pitot Coefficient=                                0.87
Sampling Time (Minutes)=                         240.0
Nozzle Diameter (mm)=                             4.60
Stack Axis #1 (Meters)=                          1.448
Stack Axis #2 (Meters)=                          1.270
Rectangular Stack
Stack Area (Square Meters)=                      1.839

Stack Velocity  (Actual, m/min)=                 1,129
Flow rate (Actual, Cubic m/min)=                 2,076
Flow rate (Standard, Wet, Cubic m/min)=          1,417
Flow rate (Standard, Dry, Cubic m/min)=          1,186

Particulate Loading - Front Half

Particulate Weight (g)=                         0.0804     Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=          29.6           33.4        32.6
Particulate Loading, Actual (mg/cu m)=            16.9
Emission Rate (kg/hr)=                            2.10

No Back Half Analysis
```

```
FILE NAME - R2PMOUT
RUN # - 2                                                    PROG.=VER 01/13/88 V2
LOCATION - MERC-OUTLET PARTICULATE/METALS                    01-15-1988  16:38:49
DATE - DECEMBER 10, 1987
PROJECT # - 8910-L-02-12

Point #      Delta P    Delta H     Stack T      Meter T
            (in. H2O)  (in. H2O)     (F)      In(F)  Out(F)
   1          0.950      0.64        264        58      56
   2          0.960      0.65        264        59      56
   3          0.900      0.59        278        63      57
   4          0.890      0.58        277        68      58
   5          0.760      0.50        266        71      60
   6          0.790      0.52        276        72      61
   7          0.800      0.53        273        72      62
   8          0.750      0.55        262        73      63
   9          0.720      0.52        279        75      64
  10          0.710      0.51        277        76      65
  11          0.630      0.40        262        76      66
  12          0.640      0.40        275        76      67
  13          0.610      0.40        271        77      67
  14          0.720      0.48        266        77      67
  15          0.500      0.32        271        79      68
  16          0.510      0.34        264        79      69
  17          0.940      0.63        270        67      64
  18          0.920      0.62        272        68      66
  19          1.100      0.75        274        74      67
  20          1.000      0.68        272        79      67
  21          1.000      0.69        271        81      68
  22          1.100      0.76        274        84      69
  23          0.880      0.60        275        87      70
  24          0.880      0.60        272        87      70
  25          0.830      0.57        270        88      71
  26          0.770      0.52        273        91      72
  27          0.590      0.39        274        92      74
  28          0.670      0.45        270        92      75
  29          0.630      0.42        272        92      76
  30          0.500      0.32        270        92      77
  31          0.410      0.26        267        91      78
  32          0.390      0.25        259        90      78
  33          0.970      0.67        270        70      70
  34          0.950      0.64        272        71      70
  35          0.890      0.60        274        76      70
  36          0.830      0.56        272        81      70
  37          0.880      0.61        270        85      71
  38          0.810      0.55        273        86      72
  39          0.780      0.53        274        87      72
  40          0.750      0.51        273        88      73
```

```
FILE NAME - R2PMOUT                                      PROG.=VER 01/13/88 V2
RUN # - 2                                                01-15-1988  16:39:18
LOCATION - MERC-OUTLET PARTICULATE/METALS
DATE - DECEMBER 10, 1987
PROJECT # - 8910-L-02-12

 41           0.740       0.50      272      88      74
 42           0.750       0.52      271      89      74
 43           0.760       0.52      274      89      75
 44           0.730       0.50      276      89      75
 45           0.720       0.49      279      90      76
 46           0.680       0.47      261      90      76
 47           0.460       0.30      268      91      76
 48           0.490       0.33      260      90      77


Fraction                  Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                             (g)        (g)        (g)       (g)
DRY CATCH                  0.0000     0.0000     0.0000    0.0000
FILTER                     1.0999     1.0373     0.0001    0.0625

Fraction                  Final Wt.  Tare Wt.     Vol.     Net Wt.
                             (g)        (g)       (ml)       (g)
PROBE RINSE             161.7002   161.6821    246.0     0.0179
IMPINGERS                  0.0000     0.0000      0.0     0.0000
Probe Rinse Blank (mg/ml)=  0.0008
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
    0.0010    80.0000
    0.0000    80.0000
    0.0010    80.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 2 (metals) Project Number 8910L

Date 12/10/87
Plant MERC
Sampling Location FF Outlet Train #3

FIELD CREW

Crew Chief Surman
Testing Engineer Griffin
Assistant Testing Engineer Soderberg
Process Engineer
Other

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC
Sampling Location FF Outlet
Run No. 2 (metals)

Date 12/10/87
Operator Griffin
Train #3

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice in H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	% H_2O	
Barometric Pressure Corrected to Sampling Elevation − 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm + (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	$P_s\ P_m$	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head in. H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in.		
Actual Nozzle Diameter, in.		
Reference, Δp, in. H_2O		

Isokinetic sampling equation:

$$\text{Where: } Vm_i = (K)(Tm - 460)\sqrt{\frac{\Delta P_s}{Ts + 460}}$$

$$K = \frac{5.168\,(Cp)(\theta i)(Mf)(Dn^2)}{PB}$$

Vm_i = Volume of the Meter per Sampling Interval, ft^3
K = Constant of Fixed and Assumed Parameters, Dimensionless
ΔPs = Velocity Head of S Pitot, in. H_2O
Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	θi	
Mole Fraction Dry Gas − (100 − % H_2O) 100	Mf	
Nozzle Diameter, in.	Dn	
5.168 (____)(____)(____)(____²) ______	K	

COMPUTER PRINTOUT

```
% H20=15.
M FACTOR=0.987
DELTA   CAL=1.808
B P=29.71
  TIC P=19.3
  0.868
 I/PNT=5.
 I STK T=270.
 I DELTA P=0.7
 O2=8.
 CO2=11.
 TEMP=78.
 RATE,CFM=0.5
 LC NZL D=  0.2019
 _ D= 0.1810
 Y MW=    30.09
__T MW=   28.26
```

8910L
MERC
Run 2
metals
DG 12/10/87

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page. D-42

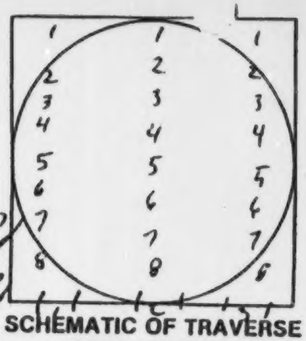
M52

FIELD DATA

RUN NO. 2
PROJECT NO. 8910L
PLANT MERC
DATE 12/10/87
SAMPLING LOCATION FF Outlet
SAMPLE TYPE MM5 (metals)
OPERATOR Griffin
FILTER NO. 12
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP UH-6
Train #3

PROBE NO. 6-1 (3)
PROBE LENGTH AND TYPE 6' glass
SAMPLE BOX NO. 10288
METER BOX NO. 6 (3)
TEMP. CONTROLLER NO. 8140
TEMP. METER NO. 9879
THERMOCOUPLE I.D. NO. TC-6-1
UMBILICAL CORD I.D. NO. U-25-1
UMBILICAL CORD I.D. NO. (Train 3)
NOZZLE NO. N-32

NOZZLE DIA. .181
ASSUMED MOISTURE % 15.0
METER ΔH@ 1.808
METER CORRECTION .987
PITOT NO. 5-8
PITOT COEFFICIENT .868
BAROMETRIC PRESSURE ~~29.91~~ 29.74
SITE TO BARO. ELEVATION (ft.) NA
CORRECTED B.P. (0.1 in./100 ft.) ~~29.91~~ 29.74
STATIC PRESSURE ~~-19.3~~ -20.1



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK ≥3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr) 0935	Pass	Pass				
PASS/FAIL		1805				

PITOT LEAK CHECK ≥3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	0925	1410	1425	1555	1635
VACUUM, in. Hg	≥15"	5"	≥15"	6"	≥15"
CFM	.004	.001	.003	.000	.004
VOLUMES					
FINAL		426.426		460.337	
INITIAL		426.253		460.151	
DIFFERENCE		.173		.186	

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1800				
VACUUM, in. Hg	5"	≥15"		≥15"	
CFM	.001				
VOLUMES					
FINAL					
INITIAL					
DIFFERENCE					

INITIAL VOLUME 394.07
FINAL VOLUME 493.64
NON SAMPLE ~~LEAK CHECK~~ VOLUME .56
ADJUSTED FINAL VOLUME 493.08

M53

COMMENTS

RUN NO. 2
DATE 12/10/87 Train #3

SAMPLING LOCATION EF Outlet
PROJECT NO. 8910L

p. 1 of 2
OPERATOR Griffin

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL 394.07 DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F		
	0	1246															
1-1	5	1251	396.33	396.37	.95	.68	.64	264	58	56	5	42	248	246	250		
1-1	10	1256	398.60	398.70	.96	.69	.65	264	59	56	5	42	246	244	255		
1-2	15	1301	400.79	400.91	.90	.64	.59	278	63	57	5	43	241	243	256		
1-2	20	1306	402.98	403.10	.89	.64	.58	277	68	58	4	44	238	256	257		
1-3	25	1311	405.03	405.14	.76	.55	.50	266	71	60	4	46	236	257	258		
1-3	30	1316	407.11	407.19	.79	.57	.52	276	72	61	4	46	231	250	258		
1-4	35	1321	409.21	409.29	.80	.58	.53	273	72	62	4	46	233	252	257		
1-4	40	1326	411.26	411.35	.75	.55	.50	262	73	63	4	47	232	249	257		
1-5	45	1331	413.26	413.36	.72	.52	.47	274	75	64	4	47	233	250	257		
1-5	50	1336	415.24	415.30	.71	.51	.46	277	76	65	4	47	228	252	255		
1-6	55	1341	417.13	417.17	.63	.46	.40	262	76	66	4	47	227	251	255		
1-6	60	1346	419.02	419.01	.64	.46	.40	275	76	67	4	48	228	252	253		
1-7	65	1351	420.88	420.83	.61	.45	.40	271	77	67	4	49	227	250	253		
1-7	70	1356	422.90	422.85	.72	.53	.48	266	77	67	4	48	228	250	253		
1-8	75	1401	424.59	424.55	.50	.36	.32	271	79	68	4	49	227	250	253		
1-8	80	1406	424.29	426.24	.51	.38	.34	264	79	69	4	49	229	250	252		
				.34													
		1433	426.58														
2-1	85	1438	428.85	428.70	.94	.68	.63	270	67	64	5	46	226	252	244		
2-1	90	1443	431.11	431.01	.92	.67	.62	272	68	66	5	47	227	244	247		
2-2	95	1448	433.59	433.46	1.1	.80	.75	274	74	67	5	47	226	248	249		
2-2	100	1453	435.96	435.86	1.0	.73	.68	272	79	67	5	47	226	250	251		
2-3	105	1458	438.34	438.24	1.0	.74	.69	271	81	68	5	47	223	246	252		
2-3	110	1503	440.85	440.73	1.1	.81	.76	274	84	69	6	47	223	246	252		
2-4	115	1508	443.09	443.02	.88	.65	.60	275	87	70	5	48	224	247	253		
2-4	120	1513	445.34	445.30	.88	.65	.60	272	87	70	5	48	223	246	253		

COMMENTS

V_1 19.3
ΔP .75
③ 1-4

V_1 19.2
ΔP .83
④ 2-5

M54

RUN NO. 2 SAMPLING LOCATION FF Outlet P. 2 of 2
DATE 12/10/87 Train #3 PROJECT NO. 87102 OPERATOR Griffin

TRAVERSE POINT NUMBER	SAMPLING TIME, min 120	CLOCK TIME (24-hr.) 1513	GAS METER READING (V_m), ft³ INITIAL ___ DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F		
2-5	125	1518	447.54	447.50	.83	.62	.57	270	88	71	5	49	224	246	253		
2-5	130	1523	449.65	449.67	.77	.57	.52	273	91	72	5	50	223	245	252		
2-6	135	1528	451.51	451.54	.59	.44	.39	274	92	74	4	50	221	246	252		
2-6	140	1533	453.56	453.47	.67	.50	.45	270	92	75	4	46	220	242	249		
2-7	145	1538	455.42	455.40	.63	.47	.42	272	92	76	4	43	218	240	249		
2-7	150	1543	457.14	457.10	.50	.37	.32	270	92	77	3	42	217	240	247		
2-8	155	1548	458.70	458.62	.41	.31	.26	267	91	78	3	42	216	247	246		
2-8	160	1553	460.22	460.15	.39	.29	.25	259	90	78	3	42	215	246	246		
				.22													
		1636	460.37														
3-1	165	1641	462.70	462.61	.97	.71	.67	270	70	70	5	43	235	242	246		
3-1	170	1646	465.00	464.90	.95	.69	.64	272	71	70	5	42	236	244	245		
3-2	175	1651	467.24	467.07	.89	.65	.60	274	76	70	5	42	234	245	251		
3-2	180	1656	469.42	469.23	.83	.61	.56	272	81	70	5	42	236	242	253		
3-3	185	1701	471.67	471.48	.88	.65	.61	270	85	71	5	43	237	251	256		
3-3	190	1706	473.89	473.67	.81	.60	.55	273	86	72	5	43	230	250	257		
3-4	195	1711	475.95	475.77	.78	.58	.53	274	87	72	5	43	231	250	258		
3-4	200	1716	478.03	477.87	.75	.56	.51	273	88	73	5	44	224	250	255		
3-5	205	1721	480.11	479.94	.74	.55	.50	272	88	74	5	43	224	251	255		
3-5	210	1726	482.20	482.03	.75	.56	.52	271	89	74	5	43	223	249	254		
3-6	215	1731	484.30	484.12	.76	.56	.52	274	89	75	5	43	224	251	254		
3-6	220	1736	486.36	486.20	.73	.54	.50	276	89	75	5	44	224	250	254		
3-7	225	1741	488.40	488.24	.72	.53	.49	279	90	76	5	44	223	249	254		
3-7	230	1746	490.41	490.28	.68	.51	.47	261	90	76	5	45	224	252	253		
3-8	235	1751	492.06	491.94	.46	.34	.36	268	91	76	4	45	224	250	254		
3-8	240	1756	493.77	493.64	.49	.37	.33	260	90	77	4	46	224	249	252		

COMMENTS

ΔP .75
V_1 20.2
③ 3-5

Avg -20.15
Static Pressure

m55

MODIFIED METHOD 5 TRAIN
SE~~MIVOLATILE ORGANIC~~S SAMPLING metals
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. 2

Sampling Location: Unit A, outlet metals

Sampling Train No. 3

Sample Box No. 10288

Sample Box Set Up Date/Person: 12-9-87 / Kimmes

Sample Box Leak Check: 0.010 cfm @ 15 in. Hg vacuum

Train to be used for:
[✓ Source Sample]
Pre-Run Proof Blank
Post-Run Proof Blank
Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N-32		
Probe	3		
♀ Probe Blank-off	3		
♂ Glass Union Blank-off	N/A		
Glass Union	N/A		
Sample Transfer Line	N/A		
♀ S-T Line Blank-off	Bl-1		
Cyclone	NA		
Flask	NA		
Long 90° Adapter	E-216		
Filter Holder Front	F-109	Filter No.:	
Filter Holder Back	F-1	12	
Short 90° Adapter	E-1		
Condenser	B-1		______
T/C-well U-Adapter	U-140		
XAD Cartridge	B-2		______
U-Adapter (A)	U-2		
3rd Impinger Mod-GBS	B-3	100 mls D.I. H_2O	______
U-Adapter (B)	U-3		
4th Impinger GBS	I-102	100 mls D.I. H_2O	______
U-Adapter (C)	U-115		
5th Impinger GBS	B-107	Empty	______
U-Adapter (D)	U-5		
6th Impinger Mod-GBS	B-121	~200 g Silica gel	______
Gooseneck	UH-6		

Component changes during run:

M67

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 2
Sampling Location: Unit A, Outlet
Sampling Train No. 3
Sample Box No. 10,282
Sample Box Recovery Date/Person 12-10-87 L. Kinner
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-10-87 March, Griffin, Cummins

Train was used for: Outlet Metals
Source Sample

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)	848.7	603.6	628.4	601.9	568.7	652.3	
Initial Wt.(g)	572.2	569.2	621.7	599.0	565.7	638.3	
Net Wt. (g)	336.5	34.4	6.7	2.9	3.0	~~14.0~~ 14.0	397.5
Description/ Color	NA					50% Spent	
Sample Bottle Tare Wt. (g)		461.1		461.1	461.1		
Sample Number		2023*		2024*	2025		
Rinse Solution		0.1N HNO_3		acid $KMnO_4$	D.I. H_2O		
Components Rinsed:		Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)		Impinger Adapt(C)	Impinger Adapt(D)		
Check pH~2		✓					
Sample Bottle Final Wt. (g)		*		*	*		
Net Wt. (g)							

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	461.1			461.1	461.1
Sample Number	2017	2018	NA	2020	2021	2022
Rinse Sol'n***	Acetone	0.1N HNO_3			Acetone	0.1N HNO_3
Ckeck pH~2		✓				
Sample Bottle Final Wt. (g)	*	*			*	*
Net Wt. (g)						

** Nozzles are not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

* weigh @ MRI

M63

D.5 Run No. 3 Spray Dryer Inlet

```
FILE NAME - R3PMIN
RUN # - 3                                                   PROG.=VER 01/13/88 V2
LOCATION - MERC-INLET METALS                                01-15-1988  16:43:29
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=                623.260
Final Meter Volume (Cubic Feet)=                  714.120
Meter Factor=                                       1.016
Multiple leak checks, see end of printout                   Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                     92.296
Gas Volume (Dry Standard Cubic Feet)=              88.834

Barometric Pressure (in Hg)=                       29.43
Static Pressure (Inches H2O)=                      -8.70

Percent Oxygen=                                     8.2
Percent Carbon Dioxide=                            11.3
Moisture Collected (ml)=                          381.8
Percent Water=                                     16.8

Average Meter Temperature (F)=                     81
Average Delta H (in H2O)=                           0.86
Average Delta P (in H2O)=                           1.304
Average Stack Temperature (F)=                    398

Dry Molecular Weight=                              30.14
Wet Molecular Weight=                              28.09

Average Square Root of Delta P (in H2O)=            1.1396
% Isokinetic=                                     101.7

Pitot Coefficient=                                  0.86
Sampling Time (Minutes)=                          185.0
Nozzle Diameter (Inches)=                           0.184
Stack Axis #1 (Inches)=                            50.0
Stack Axis #2 (Inches)=                            47.9
Rectangular Stack
Stack Area (Square Feet)=                          16.62

Stack Velocity  (Actual, Feet/min)=             5,196
Flow Rate (Actual, Cubic ft/min)=              86,371
Flow rate (Standard, Wet, Cubic ft/min)=       51,129
Flow Rate (Standard, Dry, Cubic ft/min)=       42,521

Particulate Loading - Front Half

Particulate Weight (g)=                           19.1834    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=            3.3256        3.6373     3.5316
Particulate Loading, Actual (gr/cu ft)=            1.6365
Emission Rate (lb/hr)=                          1211.86

No Back Half Analysis
```

```
                        * * METRIC UNITS * *
FILE NAME - R3PMIN
RUN # - 3                                                    PROG.=VER 01/13/88 V2
LOCATION - MERC-INLET METALS                                 01-15-1988  16:43:57
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=                 17.648
Final Meter Volume (Cubic Meters)=                   20.221
Meter Factor=                                         1.016
Multiple leak checks, see end of printout
Net Meter Volume (Cubic Meters)=                      2.613      Leak Correction=  0.0000
Gas Volume (Dry Standard Cubic Meters)=               2.515

Barometric Pressure (mm Hg)=                            748
Static Pressure (mm H2O)=                              -221

Percent Oxygen=                                         8.2
Percent Carbon Dioxide=                                11.3
Moisture Collected (ml)=                              381.8
Percent Water=                                         16.8

Average Meter Temperature (C)=                           27
Average Delta H (mm H2O)=                              21.8
Average Delta P (mm H2O)=                              33.1
Average Stack Temperature (C)=                          203

Dry Molecular Weight=                                 30.14
Wet Molecular Weight=                                 28.09

Average Square Root of Delta P (mm H2O)=             5.7432
% Isokinetic=                                         101.7

Pitot Coefficient=                                     0.86
Sampling Time (Minutes)=                              185.0
Nozzle Diameter (mm)=                                  4.67
Stack Axis #1 (Meters)=                               1.270
Stack Axis #2 (Meters)=                               1.216
Rectangular Stack
Stack Area (Square Meters)=                           1.544

Stack Velocity  (Actual, m/min)=                      1,584
Flow rate (Actual, Cubic m/min)=                      2,446
Flow rate (Standard, Wet, Cubic m/min)=               1,448
Flow rate (Standard, Dry, Cubic m/min)=               1,204

Particulate Loading - Front Half

Particulate Weight (g)=                             19.1834    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=             7626.3         8341.3     8098.7
Particulate Loading, Actual (mg/cu m)=               3753.0
Emission Rate (kg/hr)=                               550.18

No Back Half Analysis
```

```
FILE NAME - R3PMIN                                        PROG.=VER 01/13/88 V2
RUN # - 3                                                 01-15-1988  16:44:24
LOCATION - MERC-INLET METALS
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Point #      Delta P   Delta H     Stack T       Meter T
            (in. H2O) (in. H2O)     (F)     In(F)  Out(F)
  1          1.480      0.98        365       62      61
  2          1.650      1.05        404       63      61
  3          1.550      0.98        403       68      62
  4          1.450      0.87        402       68      64
  5          1.550      0.93        407       70      65
  6          1.580      0.96        407       76      66
  7          1.550      0.99        406       82      67
  8          1.350      0.88        402       86      68
  9          1.350      0.88        402       88      70
  10         1.300      0.87        398       91      71
  11         1.200      0.78        401       92      72
  12         1.300      0.86        401       93      74
  13         1.250      0.83        393       94      74
  14         1.200      0.81        393       96      76
  15         1.200      0.83        394       97      77
  16         1.200      0.83        390       97      78
  17         1.300      0.87        390       84      76
  18         1.250      0.83        396       85      78
  19         1.350      0.92        395       88      78
  20         1.500      1.00        399       93      78
  21         1.500      1.02        400       95      79
  22         1.500      1.03        398       97      79
  23         1.450      1.00        399       99      80
  24         1.400      0.95        399       99      80
  25         1.250      0.84        399      100      81
  26         1.250      0.84        399      100      81
  27         1.180      0.78        401      100      82
  28         1.180      0.79        399      100      82
  29         1.200      0.81        404       99      82
  30         1.180      0.80        404       99      82
  31         1.040      0.69        404       99      82
  32         1.030      0.68        398       99      82
  33         1.100      0.74        390       81      76
  34         1.050      0.68        390       82      77
  35         1.140      0.72        390       66      65
  36         1.020      0.62        403       66      64
  37         1.220      0.76        411       71      64


Fraction                Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                          (g)        (g)        (g)       (g)
DRY CATCH               0.0000     0.0000     0.0000    0.0000
FILTER                 18.3909     1.0337     0.0001   17.3571

Fraction                Final Wt.  Tare Wt.    Vol.     Net Wt.
                          (g)        (g)       (ml)      (g)
PROBE RINSE           159.4972   157.6703    729.0     1.8263
IMPINGERS               0.0000     0.0000      0.0     0.0000
Probe Rinse Blank (mg/ml)=  0.0008
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

Lk Rate (cfm) Time (min)
    0.0020    80.0000
    0.0020    80.0000
    0.0020    25.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 3

Project Number 8910L

Date 12/12/87

Plant MERC

Sampling Location ~~Stack~~ Scrubber Inlet - Metals #2

FIELD CREW

Crew Chief J. Surman

Testing Engineer Steve Cummins

Assistant Testing Engineer S. Klamm

Schliesser

Process Engineer

Other Lab. L. Kinner

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC
Sampling Location Scrubber Inlet
Run No. 3 (2 - Metals)
Date 12/12/87
Operator S. Cummins
Train #2

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice in H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	% H_2O	
Barometric Pressure Corrected to Sampling Elevation − 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm + (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	P_s/P_m	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head in H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in.		
Actual Nozzle Diameter, in.		
Reference, Δp, in. H_2O		

Isokinetic sampling equation:

$$\text{Where:}\quad V_{m_i} = (K)(T_m + 460)\sqrt{\frac{\Delta P_s}{T_s + 460}}$$

$$K = \frac{5.168\,(C_p)(\theta_i)(M_f)(D_n^2)}{PB}$$

V_{m_i} = Volume of the Meter per Sampling Interval, ft³
K = Constant of Fixed and Assumed Parameters, Dimensionless
ΔP_s = Velocity Head of S Pitot, in. H_2O
Ts = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	θi	
Mole Fraction Dry Gas − (100 − % H_2O)/100	Mf	
Nozzle Diameter, in.	Dn	
$\frac{5.168\,(\_\_\_\_)(\_\_\_\_)(\_\_\_\_)(\_\_\_\_^2)}{\_\_\_\_}$	K	

COMPUTER PRINTOUT

```
% H2O=15.1
M FACTOR=1.0158
DELTA H CAL=1.894
B P=29.43
STATIC P=-8.7
CP=0.863
MIN/PNT=5.
AVG STK T=367.
AVG DELTA P=1.18
% O2=8.5
% CO2=11.
M TEMP=88.
M RATE,CFM=0.5
CALC NZL D=  0.1871
NZL D= 0.1840
DRY MW=    30.10
WET MW=    28.27
DELTA H= 0.793
S RATE= 0.483
```

12-12-87
MERC
8910L
S. Cummins
Run 3
metals
Train #2

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page.

M65

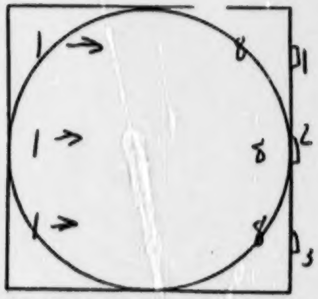
Train No 2

FIELD .TA

RUN NO. ~~8~~ 3 metals
PROJECT NO. 8910L
PLANT MERC
DATE ~~12/1/87~~ 14/12/87
SAMPLING LOCATION Scrubbler Inlet
SAMPLE TYPE M5-metals
OPERATOR S. Cummins
FILTER NO. 4
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP UH-3
Train #2

PROBE NO. AL-1
PROBE LENGTH AND TYPE 8 foot Glass
SAMPLE BOX NO. 10286
METER BOX NO. 3
TEMP. CONTROLLER NO. A-1
TEMP. METER NO. 9516
THERMOCOUPLE I.D. NO. 6-2
UMBILICAL CORD I.D. NO. U25-5
UMBILICAL CORD I.D. NO. —
NOZZLE NO. N-12

NOZZLE DIA. .184
ASSUMED MOISTURE % 15.1
METER ΔH @ 1.894
METER CORRECTION 1.0158
PITOT NO. S-9 South
PITOT COEFFICIENT 0.863
BAROMETRIC PRESSURE S/C ~~29.64~~ 29.53
SITE TO BARO. ELEVATION (ft.) 100.
CORRECTED B.P. (0.1 in./100 ft.) S/C ~~29.54~~ 29.43
STATIC PRESSURE ~~-8.7~~ -8.7 /f.



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK ≥3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	~~1026~~ 0855	19:46				
PASS/FAIL	Pass	Pass				

PITOT LEAK CHECK ≥3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	S/C INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	~~1002~~ 0857	1311	13:20	14:51	14:58
VACUUM, In. Hg	≥15"	=6"	≥15"	=7"	≥15"
CFM	ok .003	0.002	0.003	0.002	0.003
VOLUMES					
FINAL		663.59		703.35	
INITIAL		663.42		703.13	
DIFFERENCE		0.17		.22	

.17
.22
= .39
+ .05
.44

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	15:28				
VACUUM, In. Hg	=7"	≥15"		≥15"	
CFM	0.002				
VOLUMES					
FINAL	714.61				
INITIAL	714.56				
DIFFERENCE	.05				

INITIAL VOLUME 623.26
FINAL VOLUME 714.56
LEAK CHECK VOLUME 0.44
ADJUSTED FINAL VOLUME 714.12

MCG

COMMENTS

Revision 11/18/86

s/c
RUN NO. ~~2~~ 3 Train No. 2
DATE 12/~~11~~/87 12/12/87

SAMPLING LOCATION Scrubber Inlet Metals #2
PROJECT NO. 89106

p. 1 of 2
OPERATOR S. Cummins

Down 1139 up 1204

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL 623.26 DESIRED	ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m_{in}}$), °F	OUTLET ($T_{m_{out}}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	Flue Temp °F	
	0	11:24															
1-1	5	1129	625.84	625.84	1.48	.94	.98	365	62	61	5	45	235	240	258	241	
1-1	10	1134	628.50	628.49	1.65	1.01	1.05	404	63	61	5	45	234	243	260	241	
1-2	15	1139 / 1204	631.10	631.40	1.55	.95	.98	403*	68	62	5	48	229	243	259	240	
1-2	20	~~1144~~ 1209	633.62	633.83	1.45	.89	.87	~~402~~	~~65~~ 68	~~62.64~~	5	46	248	239	242	239	
1-3	25	1214	636.22	636.27	1.55	.95	.93	407	70	65	5	46	248	250	256	252	
1-3	30	1219	638.86	638.85	1.58	.98	.96	407	76	66	5	48	241	249	261	251	
1-4	35	1224	641.50	641.49	1.55	.97	.99	406	82	67	5	52	233	249	263	251	
1-4	40	1229	643.98	643.95	1.35	.85	.88	402	86	68	5	51	226	250	260	252	
1-5	45	1234	646.47	646.47	1.35	.85	.88	402	88	70	5	51	220	249	258	251	
1-5	50	1239	648.93	648.93	1.30	.83	.87	398	91	71	5	45	217	249	256	251	
1-6	55	1244	651.29	651.27	1.20	.76	.78	401	92	72	5	41	216	246	255	250	
1-6	60	1249	653.76	653.72	1.30	.83	.86	401	93	74	5	41	216	247	254	250	
1-7	65	1254	656.19	656.18	1.25	.80	.83	393	94	74	5	43	215	248	252	249	
1-7	70	1259	658.58	658.56	1.20	.77	.81	393	96	76	5	44	215	248	250	252	
1-8	75	1304	660.97	660.96	1.20	.78	.83	394	97	77	5	45	218	247	249	252	
1-8	80	1309	663.37	663.42	1.20	.78	.83	390	97	78	5	45	218	248	250	251	
	(60)	1329	initial M.Vol. =	663.59													
2-1	85	1334	666.05	665.07	1.30	.83	.87	390	84	76	5	45	248	243	245	249	
2-1	90	1339	668.47	668.47	1.25	.80	.83	396	85	78	5	45	249	243	246	250	
2-2	95	1344	670.99	670.95	1.35	.87	.92*	395	88	78	5	43	248	245	262	250	
2-2	100	1349	673.65	673.64	1.50	.96	1.00	399	93	78	6	41	223	242	255	249	
2-3	105	1354	676.32	676.30	1.50	.96	1.02	400	95	79	6	42	223	245	256	250	
2-3	110	1359	678.99	678.96	1.50	.97	1.03	398	97	79	6	43	222	247	257	251	
2-4	115	1404	681.62	681.61	1.45	.94	1.00	399	99	80	6	42	222	244	257	251	
2-4	120	1409	684.21	684.21	1.40	.90	.95	399	99	80	6	43	217	249	256	249	
2-5	125	1414	686.66	686.65	1.25	.81	.84	399	100	81	6	45	215	250	255	246	
2-5	130	1419	689.12	689.07	1.25	.81	.84	399	100	81	6	46	215	249	255	246	

COMMENTS

ΔP 1.5 = 7.50 in T.P. @ 1218 hrs
ΔP 1.4 = 7.50 in T.P @ 1227 hrs
ΔP 1.25 = 7.50 in T.P @ 1333 hrs
ΔP 1.50 = 8.0 in T.P @ 1346 hrs

* port 2.2 ΔH actual = 0.92 @ 1344 hrs

M67

RUN NO. 3 Train No. 2 SAMPLING LOCATION Scrubber Inlet, Metals #2
DATE 12/~~11~~/87 12/12/87 PROJECT NO. 89102
p. 2 of 2
OPERATOR S. Cummins

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (Vm), ft³ INITIAL ______ DESIRED	ACTUAL	VELOCITY HEAD (Δps), in. H₂O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H₂O DESIRED	ACTUAL	STACK TEMP. (Ts), °F	DRY GAS METER TEMPERATURE INLET (Tm in), °F	OUTLET (Tm out), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F	Plex Temp °F	
2-6	135	1424	691.50	691.49	1.18	.76	.78	401	100	82	6	42	215	249	255	251	
2-6	140	~~1434~~ 29	693.88	693.88	1.18	.76	.79	399	100	82	6	41	215	248	255	248	
2-7	145	~~1439~~ 34	696.27	696.27	1.20	.77	.81	404	99	82	6	40	214	249	255	248	
2-7	150	~~1444~~ 39	698.65	698.65	1.18	.76	.80	404	99	82	6	42	214	248	255	248	
2-8	155	~~1449~~ 44	700.88	700.89	1.04	.67	.69	404	99	82	6	44	214	248	252	248	
2-8	160	~~1454~~ 49	703.10	703.13	1.03	.67	.68	398	99	82	6	44	215	248	251	249	
—																	
—	160	1514	Initial Mtr Vol. =	703.35													
3-1	165	1519	705.61	705.62	1.10	.70	.74	390	81	76	5	47	238	249	243	248	
3-1	170	1524 1819	707.82	707.92	1.05	.67	.68	390	82	77	6	45	245	250	256	248	
3-2	175	1824	710.07	710.10	1.14	.71	.72	390	66	65	6	42	244	252	255	256	
3-2	180	1829	712.18	712.18	1.07	.62	.62	403	66	64	6	42	233	252	258	254	
3-3	185	1834	714.48	714.56	1.22	.75	.76	411	71	64	6	43	224	253	255	256	
3-3	190	~~1839~~															
3-4	195																
3-4	200																
3-5	205																
3-5	210																
3-6	215																
3-6	220																
3-7	225																
3-7	230																
3-8	235																
3-8	240																

Down 15:24 ↓
Up ↑ 1819
Down 1834

COMMENTS

ΔP = 1.1" = 7.50 in. T.P. @ 1517 hrs
ΔP = 1.1" = 7.75 in T.P @ 1826 hrs
ΔP = 1.2 = 8.0 in T.P @ 1831 hrs

MG8

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. 3

Sampling Location: Unit A, Inlet Metals

Sampling Train No. 2

Sample Box No. 10286

Sample Box Set Up Date/Person: 12-10-87 Kinner

Sample Box Leak Check: 0.007 cfm @ 15 in. Hg vacuum

~~Train to be used~~ for:
[✓ Source Sample]
~~Pre-Run Proof Blank~~
Post-Run Proof Blank
Sampling Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	
Nozzle	N-12		
Probe	2		
♀ Probe Blank-off	2		
♂ S-T Line Blank-off	2		
Glass Union	2		
Sample Transfer Line	2		
♀ S-T Line Blank-off	Bl-2		
Long 90° Adapter	WA		
Cyclone	Cy-107		
Flask	CF-105		
Filter Holder Front	F-104	Filter Number:	
Filter Holder Back	F-210	AM 4	Initial Weight (grams)
Short 90° Adapter	E-211		
1st Impinger Mod-GBS	B-111	Empty	
U-Adapter (A)	U-4		
2nd Impinger GBS	B-4	100 mls	
U-Adapter (B)	U-6	5% HNO_3/10% H_2O_2	
3rd Impinger GBS	B-5	100 mls	
U-Adapter (C)	U-7	5% HNO_3/10% H_2O_2	
4th Impinger GBS	B-109	100 mls	
U-Adapter (D)	U-8	acidic $KMnO_4$	
5th Impinger GBS	B-6	100 mls	
U-Adapter (E)	U-9	0.5 N NaOH	
6th Impinger Mod-GBS	B-130	~200g Silica gel	
Gooseneck	UH-3		

Components exchanged during run:

M75

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 3
Sampling Location: Unit A, Inlet
Sampling Train No. 2
Sample Box No. 10286
Sample Box Recovery Date/Person ~~12-10-87~~ 12-13-87 Kinner
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-12-87 D Masch Griffin Cummins

Train was used for: Inlet metals
Source sample

BACK HALF RECOVERY

	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Impinger Final Wt. (g)	763.1	676.0	588.1	560.1	622.1	670.4	
Initial Wt. (g)	490.0	609.6	576.1	556.4	611.3	654.6	
Net Wt. (g)	273.1	66.4	12.0	3.7	10.8	15.8	381.8
Description/ Color	NA	→				60% spent	
Sample Bottle Tare Wt. (g)		461.1		461.1	461.1		
Sample Number		3007 *		3008 *	3009		
Rinse Solution		0.1N HNO₃		acid KMnO₄	D.I. H₂O		
Components Rinsed:		Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)		Impinger Adapt(C)	Impinger Adapt(D)		
Check pH˜2		✓					
Sample Bottle Final Wt. (g)		*					
Net Wt. (g)							

273.1
66.4
12.0
3.7
10.8
15.8
381.8

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter #4	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°Adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	461.1			461.1	461.1
Sample Number	3001	3002	3003	3004	3005	3006
Rinse Sol'n***	Acetone	0.1N HNO₃			Acetone	0.1N HNO₃
Ckeck pH˜2		✓				✓
Sample Bottle Final Wt. (g)	*					
Net Wt. (g)						

** Nozzles are not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

Weigh @ MRI

m76

D.6 Run No. 3 Baghouse Outlet

```
FILE NAME - R3PMOUT                                           PROG.=VER 01/13/88 V2
RUN # - 3                                                     01-19-1988  15:05:10
LOCATION - MERC-OUTLET PARTICULATE/METALS
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Feet)=              494.060
Final Meter Volume (Cubic Feet)=                577.250
Meter Factor=                                     0.987
Multiple leak checks, see end of printout               Leak Correction=  0.0000
Net Meter Volume (Cubic Feet)=                   82.109
Gas Volume (Dry Standard Cubic Feet)=            81.733

Barometric Pressure (in Hg)=                      29.53
Static Pressure (Inches H2O)=                    -21.10

Percent Oxygen=                                     8.2
Percent Carbon Dioxide=                            11.3
Moisture Collected (ml)=                          297.8
Percent Water=                                     14.6

Average Meter Temperature (F)=                       64
Average Delta H (in H2O)=                          0.56
Average Delta P (in H2O)=                         0.841
Average Stack Temperature (F)=                      273

Dry Molecular Weight=                             30.14
Wet Molecular Weight=                             28.36

Average Square Root of Delta P (in H2O)=         0.9109
% Isokinetic=                                     104.7

Pitot Coefficient=                                 0.87
Sampling Time (Minutes)=                          195.0
Nozzle Diameter (Inches)=                         0.181
Stack Axis #1 (Inches)=                            57.0
Stack Axis #2 (Inches)=                            50.0
Rectangular Stack
Stack Area (Square Feet)=                         19.79

Stack Velocity  (Actual, Feet/min)=               3,897
Flow Rate (Actual, Cubic ft/min)=                77,132
Flow rate (Standard, Wet, Cubic ft/min)=         51,969
Flow Rate (Standard, Dry, Cubic ft/min)=         44,357

Particulate Loading - Front Half

Particulate Weight (g)=                          0.0969    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=          0.0183         0.0200     0.0194
Particulate Loading, Actual (gr/cu ft)=          0.0105
Emission Rate (lb/hr)=                             6.94

No Back Half Analysis
```

```
                        * * METRIC UNITS * *
FILE NAME - R3PMOUT
RUN # - 3                                                  PROG.=VER 01/13/88 V2
LOCATION - MERC-OUTLET PARTICULATE/METALS                  01-19-1988  15:05:38
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Initial Meter Volume (Cubic Meters)=              13.990
Final Meter Volume (Cubic Meters)=                16.345
Meter Factor=                                      0.987
Multiple leak checks, see end of printout                  Leak Correction=  0.0000
Net Meter Volume (Cubic Meters)=                   2.325
Gas Volume (Dry Standard Cubic Meters)=            2.314

Barometric Pressure (mm Hg)=                         750
Static Pressure (mm H20)=                           -536

Percent Oxygen=                                      8.2
Percent Carbon Dioxide=                             11.3
Moisture Collected (ml)=                           297.8
Percent Water=                                      14.6

Average Meter Temperature (C)=                        18
Average Delta H (mm H20)=                           14.1
Average Delta P (mm H20)=                           21.3
Average Stack Temperature (C)=                       134

Dry Molecular Weight=                              30.14
Wet Molecular Weight=                              28.36

Average Square Root of Delta P (mm H20)=          4.5909
% Isokinetic=                                      104.7

Pitot Coefficient=                                  0.87
Sampling Time (Minutes)=                           195.0
Nozzle Diameter (mm)=                               4.60
Stack Axis #1 (Meters)=                            1.448
Stack Axis #2 (Meters)=                            1.270
Rectangular Stack
Stack Area (Square Meters)=                        1.839

Stack Velocity  (Actual, m/min)=                   1,188
Flow rate (Actual, Cubic m/min)=                   2,184
Flow rate (Standard, Wet, Cubic m/min)=            1,472
Flow rate (Standard, Dry, Cubic m/min)=            1,256

Particulate Loading - Front Half --

Particulate Weight (g)=                           0.0969    Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=            41.9          45.8        44.5
Particulate Loading, Actual (mg/cu m)=              24.1
Emission Rate (kg/hr)=                              3.15

No Back Half Analysis
```

```
FILE NAME - R3PMOUT                                         PROG.=VER 01/13/88 V2
RUN # - 3                                                   01-19-1988  15:06:04
LOCATION - MERC-OUTLET PARTICULATE/METALS
DATE - DECEMBER 12,1987
PROJECT # - 8910-L-02-12

Point #      Delta P    Delta H    Stack T       Meter T
            (in. H20) (in. H20)     (F)     In(F)  Out(F)
  1          0.940      0.61       280       48      47
  2          1.100      0.71       282       49      47
  3          0.940      0.62       265       54      47
  4          0.940      0.62       274       60      48
  5          0.860      0.56       281       65      50
  6          0.930      0.61       280       58      54
  7          0.880      0.57       280       61      55
  8          0.940      0.63       265       66      56
  9          0.810      0.53       273       70      56
  10         0.770      0.50       279       73      58
  11         0.700      0.46       267       76      60
  12         0.660      0.43       271       77      60
  13         0.620      0.40       276       78      61
  14         0.600      0.40       269       79      63
  15         0.470      0.30       272       79      64
  16         0.580      0.39       270       79      64
  17         0.980      0.66       272       62      60
  18         0.980      0.66       273       63      60
  19         1.000      0.67       271       67      60
  20         1.000      0.67       276       71      60
  21         0.980      0.66       276       73      60
  22         1.100      0.75       271       76      60
  23         0.950      0.64       272       78      61
  24         0.970      0.66       278       79      62
  25         0.790      0.53       272       80      62
  26         0.880      0.59       274       80      62
  27         0.780      0.52       277       81      63
  28         0.720      0.48       270       81      64
  29         0.600      0.39       272       81      64
  30         0.580      0.37       276       81      65
  31         0.420      0.26       269       81      65
  32         0.520      0.34       262       81      66
  33         0.980      0.66       275       66      65
  34         0.980      0.66       275       67      66
  35         0.960      0.65       269       72      66
  36         0.960      0.64       253       50      50
  37         0.900      0.58       272       52      50
  38         0.910      0.59       273       57      50
  39         1.100      0.73       277       61      51

Fraction              Final Wt.  Tare Wt.  Blank Wt.  Net Wt.
                         (g)        (g)       (g)       (g)
DRY CATCH              0.0000     0.0000    0.0000    0.0000
FILTER                 1.1041     1.0253    0.0001    0.0787

Fraction              Final Wt.  Tare Wt.    Vol.     Net Wt.
                         (g)        (g)      (ml)       (g)
PROBE RINSE          159.1791   159.1607    200.0    0.0182
IMPINGERS              0.0000     0.0000      0.0    0.0000
Probe Rinse Blank (mg/ml)=  0.0008
Impinger Blank (mg/ml)=  0.0000

Multiple leak checks used.  Final readings for each segment are listed below

 LK Rate (cfm) Time (min)
     0.0010    80.0000
     0.0010    80.0000
     0.0070    35.0000
```

MIDWEST RESEARCH INSTITUTE

Run Number 3 (Metals) Project Number 8910L

Date 12/12/87

Plant MERC

Sampling Location FF Outlet Train #3

FIELD CREW

Crew Chief	Surman
Testing Engineer	Griffin
Assistant Testing Engineer	Soderberg
Process Engineer	
Other	

M77

NOMOGRAPH AND ISOKINETIC SAMPLING WORKSHEET

Plant MERC
Sampling Location FF Outlet
Run No. 3

Date 12/12/87
Operator Griffin
Train #3

MANUAL CALCULATIONS

Calibrated Pressure Differential Across Orifice in. H_2O	$\Delta H_@$	
Average Meter Temperature (Ambient + 20°F), °F	$T_{m_{avg.}}$	
Percent Moisture in Gas Stream by Volume	% H_2O	
Barometric Pressure Corrected to Sampling Elevation – 0.1 in. Hg per 100 ft. Increase in Elevation from Barometer	PB	
Absolute Pressure in Stack, in. Hg Pm + (0.074 × Static Pressure in in. H_2O)	P_s	
Ratio of Stack Pressure to Meter Pressure	P_s/P_m	
Average Stack Temperature, °F	$T_{s_{avg.}}$	
Average Velocity Head in. H_2O	$\Delta P_{s_{avg.}}$	
C Factor		
Calculated Nozzle Diameter, in.		
Actual Nozzle Diameter, in.		
Reference, Δp, in. H_2O		

Isokinetic sampling equation:

Where: $$V_{m_i} = (K)(T_m + 460)\sqrt{\frac{\Delta P_s}{T_s + 460}}$$

$$K = \frac{5.168\,(C_p)(\theta_i)(M_f)(D_n^2)}{PB}$$

V_{m_i} = Volume of the Meter per Sampling Interval, ft^3
K = Constant of Fixed and Assumed Parameters, Dimensionless
ΔP_s = Velocity Head of S Pitot, in. H_2O
T_s = Stack Temperature, °F

Pitot Coefficient	Cp	
Sampling Time Interval, Minutes	θi	
Mole Fraction Dry Gas – (100 – % H_2O)/100	Mf	
Nozzle Diameter, in.	Dn	
5.168 (____)(____)(____)(____^{2}) / ____	K	

COMPUTER PRINTOUT

```
% H2O=13.
Y FACTOR=0.987
DELTA H CAL=1.886
B P=29.35
STATIC P=21.1
DP=0.860
MIN/PNT=5.
AVG STK T=272.
AVG DELTA P=0.7
% O2=8.
% CO2=1..
M TEMP=75.
M RATE,CFM=0.5
CALC NZL D=  0.2020
NZL D= 0.1[illegible]0
DRY MW=     30.08
WET MW=     28.26
DELTA H= 0.321
   RATE= 0.401
```

MERC
8910 L
Run 3
Metals
12/12/87
RH

MANUAL CALCULATIONS

The calculations above must be performed and a nomograph must be used to determine the console ΔH setting. The sample volume per time interval is calculated between each point during a test by using the above equations. The reverse side of this page describes the procedure to program the SHARP EL-507 to determine sample volume per interval using ΔP, stack temperature and meter temperature.

COMPUTER CALCULATIONS

The procedures employed in using the TRS 80 PC 3 are described in a handout entitled "Instructions for the Nomograph Program Developed for the TRS 80 PC 3." A command summary is given on the back of this page.

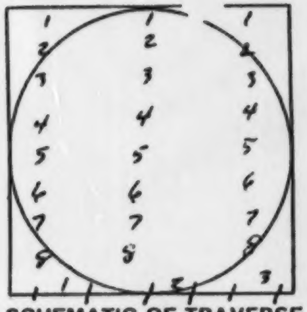
M78

FIELC ATA

RUN NO. 3
PROJECT NO. 8910 L
PLANT MERC
DATE ~~12/11/87~~ DH 12/12/87
SAMPLING LOCATION FF Outlet
SAMPLE TYPE MMS (Metals)
OPERATOR Griffin
FILTER NO. PM-2
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP UH-6

PROBE NO. 6-1 (3)
PROBE LENGTH AND TYPE 6' glass
SAMPLE BOX NO. 10288
METER BOX NO. 6 (3)
TEMP. CONTROLLER NO. 8140
TEMP. METER NO. 9879
THERMOCOUPLE I.D. NO. TC 6-1
UMBILICAL CORD I.D. NO. U25-1
UMBILICAL CORD I.D. NO. Train 3
NOZZLE NO. N-32

NOZZLE DIA. .181
ASSUMED MOISTURE % 15
METER ΔH @ 1.808
METER CORRECTION .987
PITOT NO. 5-8
PITOT COEFFICIENT .868
BAROMETRIC PRESSURE 29.53
SITE TO BARO. ELEVATION (ft.) NA
CORRECTED B.P. (0.1 in./100 ft.) 29.53
STATIC PRESSURE ~~21.15~~ -21.1



SCHEMATIC OF TRAVERSE POINT LAYOUT

Train #3

PITOT LEAK CHECK ≥ 3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	DH ~~1000~~ 0835	1935				
PASS/FAIL		pass				

PITOT LEAK CHECK ≥ 3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	0340 ~~0950~~ DH	1255	1305	1445	1500
VACUUM, In. Hg	≥15"	5"	≥15"	6"	≥15"
CFM	.006 ~~.005~~ DH	.001	.007	.001	.004
VOLUMES					
FINAL		527.274		561.515	
INITIAL		527.127		561.475	
DIFFERENCE		.147		.040	

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1930				
VACUUM, In. Hg	6"	≥15"		≥15"	
CFM	.007				
VOLUMES					
FINAL					
INITIAL					
DIFFERENCE					

INITIAL VOLUME 494.06
FINAL VOLUME 577.732
LEAK CHECK VOLUME .482
ADJUSTED FINAL VOLUME 577.250

B79

COMMENTS

Revision 11/18/86

RUN NO. 3 (Metals)
DATE 12/12/87 Train #3
SAMPLING LOCATION EF Outlet
PROJECT NO. 8910 L
p. 1 of 2
OPERATOR Griffin

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ DESIRED	GAS METER READING ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F
	0	1117	INITIAL 494.06												
1-1	5	1122	496.25	496.22	.94	.65	.61	280	48	47	5	38	235	242	259
1-1	10	1127	498.62	498.57	1.1	.74	.71	292	49	47	5	37	232	245	258
1-2	15	1132	500.85	500.80	.94	.67	.62	265	54	47	5	39	232	245	258
1-2	20	1137	503.03	503.04	.94	.67	.62	274	60	48	5	39	229	243	257
1-3	25	1142	505.22	505.233	.86	.61	.56	281	65 DG	50 DG	5	40	227	245	257
1-3	30	1205	507.51	507.40	.93	.66	.41	~~288~~ 279	~~68~~ 53	~~55~~ 54	5	42	227	244	257
1-4	35	1210	509.67	509.56	.88	.62	.57	280	61	55	5	39	233	257	253
1-4	40	1215	511.95	511.85	.94	.68	.63	265	66	56	5	39	233	256	254
1-5	45	1220	514.05	513.98	.91	.58	.53	273	70	56	5	41	231	255	256
1-5	50	1225	516.11	516.02	.77	.55	.50	279	73	58	5	44	232	256	257
1-6	55	1230	518.10	518.01	.70	.51	.46	267	74	60	4	44	232	257	258
1-6	60	1235	520.02	519.91	.66	.48	.43	271	77	60	4	45	231	255	258
1-7	65	1240	521.88	521.78	.62	.45	.40	276	78	61	4	46	230	255	257
1-7	70	1245	523.73	523.64	.60	.44	.40	269	79	63	4	46	230	255	257
1-8	75	1250	525.35	525.28	.46	.34	.30	272	79	64	3	47	231	258	257
1-8	80	1255	527.16	527.127	.58	.43	.39	270	79	64	4	47	230	256	257
												47	230	256	256
				.173											
		1325	527.30												
2-1	85	1330	529.61	529.67	.98	.71	.66	272	62	60	5	41	232	256	251
2-1	90	1335	531.92	531.98	.98	.71	.66	273	63	60	5	42	233	256	253
2-2	95	1340	534.27	534.32	1.0	.72	.67	271	67	60	5	44	234	259	257
2-2	100	1345	536.62	536.64	1.0	.72	.67	276	71	60	5	44	233	259	259
2-3	105	1350	538.95	538.97	.98	.71	.66	276	73	60	5	43	226	247	257
2-3	110	1355	541.43	541.44	1.1	.80	.75	271	76	60	6	43	224	249	256
2-4	115	1400	543.74	543.75	.95	.69	.64	272	78	61	5	44	223	247	256
2-4	120	1405	546.07	546.09	.97	.71	.66	278	79	62	5	44	224	247	256

Down @ 1142
up @ 1200

D-66

COMMENTS

505.29 ① point 1-3

NON SAMPLE VOLUME .057
1st Port Change .173
NSV .057
2nd P.C. .195
.482

Static Pressure = 21.28
@ 1-5 ΔP = .77
V_1 = 20.7

Static Pres. = 20.83
@ 2-4 ΔP = .97
V_1 20.1

S.P. 21.05 avg

M 80

Revision 8-4-86

RUN NO. 3 (Metals) Train #3
DATE 12/12/87
SAMPLING LOCATION FF Outlet
PROJECT NO. 8910 L
p. 2 of 2
OPERATOR Griffis

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr.)	GAS METER READING (V_m), ft³ INITIAL DESIRED	GAS METER READING ACTUAL	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL ACTUAL	STACK TEMP. (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VAC., in. Hg	IMPINGER TEMP., °F	SAMPLE BOX TEMP., °F	PROBE TEMP., °F	FILTER TEMP., °F		
	120	1405															
2-5	125	1410	548.19	548.25	.79	.58	.53	272	80	62	5	44	224	246	255		
2-5	130	1415	550.42	550.45	.88	.64	.59	274	80	62	5	45	222	246	255		
2-6	135	1420	552.51	552.54	.78	.57	.52	271	81	63	5	46	223	245	254		
2-6	140	1425	554.54	554.62	.72	.53	.48	270	81	64	5	46	222	245	254		
2-7	145	1430	556.39	556.46	.60	.44	.39	272	81	64	4	46	223	244	253		
2-7	150	1435	558.20	558.23	.58	.42	.37	276	81	65	4	46	221	248	252		
2-8	155	1440	559.75	559.75	.42	.31	.26	269	81	65	3	46	222	247	251		
2-8	160	1445	561.49	561.475	.52	.39	.34	267	81	66	4	45	222	250	251		
				.195													
		1510	561.67														
3-1	165	1515	564.00	564.06	.98	.71	.66	275	66	65	5	42	227	253	246		
3-1	170	1520	566.33	566.37	.98	.71	.66	275	67	66	5	42	226	252	248		
3-2	175	1525	568.65	568.663	.96	.70	.65	269	72	66	5	43	225	252	252		
3-2	180	1820	570.99	571.12	.96	.69	.64	253	50	50	5	41	236	254	254		
3-3	185	1825	573.16	573.21	.90	.63	.58	272	52	50	5	41	235	254	256		
3-3	190	1830	575.35	575.34	.91	.64	.59	273	57	50	5	43	231	247	256		
3-4	195	1835	577.77	577.732	1.1	.78	.73	277	61	51	6	44	231	247	257		
3-4	200																
3-5	205																
3-5	210																
3-6	215																
3-6	220																
3-7	225																
3-7	230																
3-8	235																
3-8	240																

Down @ 1525

Up @ 1815

DOWN 1835

COMMENTS

568.72 Initial volume @ 1815 point 3-2

.057 NON Sample Volume (Down Time) 1525-1815
.00 NON Sample Volume (Down Time) 1835-Test Complete

MBV

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. ~~4~~ 3

Sampling Location: Unit A, outlet metals

Sampling Train No. 3

Sample Box No. 10288

Sample Box Set Up Date/Person: 12-10-87 Kinner

Sample Box Leak Check: ________ cfm @ ________ in. Hg vacuum

Train to be used for:
[✓ Source Sample]
Pre-Run Proof Blank
Post-Run Proof Blank
Sampling Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N-32		
Probe	3		
♀ Probe Blank-off	3		
♂ S-T Line Blank-off	N/A	c/fl.	
Glass Union	N/A		
Sample Transfer Line	N/A		
♀ S-T Line Blank-off	Bl-1		
Long 90° Adapter	NA E-216		
Cyclone	NA		
Flask			
Filter Holder Front	F-109	Filter Number:	
Filter Holder Back	F-1	________	
Short 90° Adapter	E-1		
1st Impinger Mod-GBS	B-1	Empty	________
U-Adapter (A)	U-140		
2nd Impinger GBS	B-2	100 mls 5% HNO_3/10% H_2O_2	________
U-Adapter (B)	U-2		
3rd Impinger GBS	B-3	100 mls 5% HNO_3/10% H_2O_2	________
U-Adapter (C)	U-3		
4th Impinger GBS	I-102	100 mls acidic $KMnO_4$	________
U-Adapter (D)	U-115		
5th Impinger GBS	B-107	100 mls 0.5 N NaOH	________
U-Adapter (E)	U-5		
6th Impinger Mod-GBS	B-121	~200g Silica gel	________
Gooseneck	UH-6		

Components exchanged during run:

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Train was used for: Outlet Metals

Run No. 3

Sampling Location: Unit A, outlet

Sampling Train No. 3

Sample Box No. 10288

Sample Box Recovery Date/Person 12-12-87 B. Kimmel

Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-12-87 Masch Cummins Griffin

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)	645.5	640.5	623.8	631.5	650.2	678.6	
Initial Wt.(g)	501.1	583.0	619.3	642.3	561.2	664.6	
Net Wt. (g)	143.6	57.5	4.5	-10.8	89.0	14.0	308.6
Description/ Color	NA	→	→	→	Look diluted material wont come off w/KmnO4 Rinse	80% Spent	
Sample Bottle Tare Wt. (g)		461.1		461.1	461.1		
Sample Number		~~3007~~ *3023		3024 ~~3008~~ *	3025		
Rinse Solution		0.1N HNO₃		acid KMnO₄	D.I. H₂O		
Components Rinsed:		Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)		Impinger Adapt(C)	Impinger Adapt(D)		
Check pH⁻2		✓					
Sample Bottle Final Wt. (g)		*					
Net Wt. (g)							

143.6
57.5
4.5
89.0
14.0
308.6
10.8
[illegible]

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	461.1			461.1	461.1
Sample Number	3017	3018	NA	3020	3021	3022
Rinse Sol'n***	Acetone	0.1N HNO₃			Acetone	0.1N HNO₃
Ckeck pH⁻2		✓				✓
Sample Bottle Final Wt. (g)	*					
Net Wt. (g)						

** Nozzles are not to be rinsed with acid.

*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

* weight @ MRI

m89

D.7 M3 Sampling and Orsat Analysis

INTEGRATED GAS SAMPLING DATA FORM

Plant MERC

Sampling Location Scrubber inlet

Sample Container Type

Sample Bag I.D. No. 1

Date 12-9-87

Operator S. Schliesser

Test No. 1

Barometric Pressure 29.85

Flow Meter: Type Rotometer

I.D.

Pump: Type Thomas

I.D.

Flow Control Device (Microvalve? Critical Orifice?) Rotomteter

Desired Flow Rate (cc/min) 60 SS

Total Sampling Time 4 hrs

Average Flow Rate (cc/min, l/min)

Average Flow Meter Reading

Estimated Actual Volume (liters)

Time 24 Hr Clock	Flow Meter Reading	Comments
1540	60 SS	START OF Run following 5 min purge
1620	40 SS	
1640	40 "	stop of pump close to end of traverse
1723	40 "	restart of pump following 5 min purge
1805	60	
1827	0	stop of pump close to end of traverse

M19

DRY MOLECULAR WEIGHT DETERMINATION

PLANT MERC
DATE 12-9-87
SAMPLING TIME (24-hr CLOCK) 1540-1827
SAMPLING LOCATION INLET
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS GRAB) INTEGRATED
ANALYTICAL METHOD ORSAT
AMBIENT TEMPERATURE 70°
OPERATOR SCHLIESSER

COMMENTS:
Pre-analysis Leak check;
Burette - No Leak
Pipettes - No Leak
Post-analysis Leak check;
Burette - No Leak } after 4 minutes
Pipettes - No Leak }

GAS \ RUN	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb/lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	11.0	11.0	10.8	10.8	11.0	11.0	10.93	44/100	
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	19.5	8.5	19.4	8.6	19.6	8.6	8.57	32/100	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)								28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)								28/100	
								TOTAL	

EPA (Dur) 230
4/72

m20

INTEGRATED GAS SAMPLING DATA FORM

Plant MERC
Date 12-8-87
Sampling Location OUTLET
Operator SODERBERG
Sample Container Type ALUMINIZED MYLAR
Test No. 1
Sample Bag I.D. No. OB1
Barometric Pressure 29.85

Flow Meter: Type 602 ROTOMETER
I.D.
Pump: Type GAST
I.D. X3888

Flow Control Device (Microvalve? Critical Orifice?) ROTOMETER
Desired Flow Rate (cc/min)

Total Sampling Time 2 HRS
Average Flow Meter Reading 58 P
Average Flow Rate (cc/min, l/min)
Estimated Actual Volume (liters)

Time 24 Hr Clock	Flow Meter Reading	Comments
15:40	50 P	START PORT 2
15:50	50 P	
16:00	60 P	
16:10	60 P	
16:20	60 P	
16:35	60 P	STOPPED FOR PORT CHANGE
17:25	60 P	START PORT 3
17:35	60 P	
17:45	60 P	
18:00	60 P	
18:15	60 P	
18:30	60 P	STOPPED FOR PORT CHANGE
		Leak check - Diaphrem pump leaking -
		entire sample void.

DRY MOLECULAR WEIGHT DETERMINATION

PLANT MERC
DATE 12-9-87 Run # 1
SAMPLING TIME (24-hr CLOCK)
SAMPLING LOCATION OUTLET
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS GRAB) INTEGRATED
ANALYTICAL METHOD ORSAT
AMBIENT TEMPERATURE 50°
OPERATOR SODERBERG

COMMENTS:
Pre-analysis Leak check:
Burette – No Leak
Pipettes – No Leak
Post-analysis Leak check:
Burette – No Leak
Pipettes – No Leak } after 4 minutes

RUN / GAS	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb/lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	9.0	9.0	9.0	9.0	9.0	9.0	9.0	44/100	
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	19.7	10.7	19.5	10.5	19.6	10.6	10.6	32/100	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)								28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)								28/100	
								TOTAL	

Sampling pump leaking – entire sample void –
Due to close comparison between inlet and outlet CEMS
data for this run, the inlet results will be used for
preliminary determinations 12/09/87

EPA (Dur) 230
4/72

M32

INTEGRATED GAS SAMPLING DATA FORM

Plant MERC
Sampling Location Inlet
Sample Container Type Bag
Sample Bag I.D. No. 1

Date 12-10-87
Operator S. Schliesser
Test No. 2
Barometric Pressure

Flow Meter: Type Rotameter
I.D.

Pump: Type Thomas
I.D.

Flow Control Device (Microvalve? Critical Orifice?) Valve
Desired Flow Rate (cc/min) 6

Total Sampling Time
Average Flow Rate (cc/min, l/min)

Average Flow Meter Reading 60
Estimated Actual Volume (liters)

Time 24 Hr Clock	Flow Meter Reading	Comments
1255	60 55	purged 5 minutes after stack insertion
1300	60 55	sampled into bag
1357	60 55	" " "
1358	0	disconnected prior to last traverse point
1448	70 55	purged 5 min. after port change
1538	0	disconnected prior to last traverse point
1655	60	purged 10 minutes after port change
1740	0	stopped near end of test
		Leak check - No Leak

DRY MOLECULAR WEIGHT DETERMINATION

PLANT MERC

DATE 12-10-87 Run #2

SAMPLING TIME (24-hr CLOCK) 12:55 - 17:40

SAMPLING LOCATION INLET

SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS GRAB) INTEGRATED

ANALYTICAL METHOD ORSAT

AMBIENT TEMPERATURE

OPERATOR SODERBERG

COMMENTS:

Pre-analysis leak check:

Burette - No Leak

Pipettes - No Leak

Post-analysis leak checks

Burette - No Leak } after for minutes

Pipettes - No Leak }

RUN / GAS	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb/lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	11.1	11.1	11.0	11.0	11.0	11.0	11.03	44/100	
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	19.6	8.5	19.6	8.6	19.5	8.5	8.53	32/100	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)								28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)								28/100	
								TOTAL	

M44

EPA (Dur) 230
4/72

INTEGRATED GAS SAMPLING DATA FORM

Plant MERC
Date 12-10-87
Sampling Location OUTLET
Operator SODERBERG
Sample Container Type ALUMINIZED MYLAR
Test No. 2
Sample Bag I.D. No. 1048
Barometric Pressure

Flow Meter: Type 602 ROTOMETER
I.D.
Pump: Type GAST
I.D. 40

Flow Control Device (Microvalve? Critical Orifice?) ROTOMETER
Desired Flow Rate (cc/min) 70 P

Total Sampling Time 2:09
Average Flow Meter Reading 75P
Average Flow Rate (cc/min, l/min) 75P
Estimated Actual Volume (liters)

Time 24 Hr Clock	Flow Meter Reading	Comments
12:53	75P	START PORT 2
13:05	STOPPED	SAMPLE CONTAMINATED, BAG EMPTIED
13:17	75P	RESTART
13:30	75P	
13:46	75P	
13:56	75P	END PORT 2
14:40	75P	START PORT 3
~14:55		STOP
15:40	75P	RESTART
16:00	75P	STOP FOR PORT CHANGE
16:41	≈ 75P	START PORT 1
17:00	75P	
17:15	75P	
17:36	75P	STOP
		Leak check - No Leak

M56

DRY MOLECULAR WEIGHT DETERMINATION

PLANT MERC
DATE 12-10-87 Run #2
SAMPLING TIME (24-hr CLOCK) 12:53 - 17:36
SAMPLING LOCATION OUTLET
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS GRAB) INTEGRATED
ANALYTICAL METHOD ORSAT
AMBIENT TEMPERATURE
OPERATOR SODERBERG

COMMENTS:
Pre-analysis Leak check:
Burette - No Leak
Pipettes - No Leak
Post-analysis Leak check:
Burette - No Leak } after 4 minutes
Pipettes - No Leak }

RUN / GAS	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb/lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	10.9	10.9	10.8	10.8	11.0	11.0	10.90	44/100	
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	19.5	8.6	19.3	8.5	19.6	8.6	8.57	32/100	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)								28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)								28/100	
								TOTAL	

m57

EPA (Dur) 230
4/72

INTEGRATED GAS SAMPLING DATA FORM

Plant MERC
Sampling Location Scrubber inlet
Sample Container Type Bag
Sample Bag I.D. No. #1

Date 12/12/87
Operator S. Schliesser
Test No. 3
Barometric Pressure

Flow Meter: Type Rotameter
I.D.

Pump: Type Thomas
I.D.

Flow Control Device (Microvalve? Critical Orifice?) Valve
Desired Flow Rate (cc/min)

Total Sampling Time
Average Flow Rate (cc/min, l/min) -

Average Flow Meter Reading
Estimated Actual Volume (liters)

Time 24 Hr Clock	Flow Meter Reading	Comments
1125	150 +	pump started; system purged
1140		pump stopped because MMS sampling interrupted due
		to process upset
1204	150 +	restart pump: system purged
1209	70 SS	bag connected after system purged
1250	0	pump stopped: near last traverse point
1330	150 +	restart pump: system purged
1335	70 SS	bag connected after system purge
1430	70 SS	steady sampling
1439	0	pump stopped near last traverse point
1515	150 +	pump started & system purging
1520	0	pump stopped due to process upset
1820	150 +	pump started for system purge
1825	80 SS	bag connected
1832	0	pump stopped due to process upset
		Note: vacuum level was less than 2" Hg
		during all sampling conditions;
		leak checked @ 4" Hg with no
		bubbles observed when sample
		line immersed into water
		S. Schl

M69

DRY MOLECULAR WEIGHT DETERMINATION

PLANT MERC
DATE 12-12-87
SAMPLING TIME (24-hr CLOCK) 11:25 - 18:32
SAMPLING LOCATION ~~INTEGRATED~~ INLET
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS GRAB) INTEGRATED
ANALYTICAL METHOD ORSAT
AMBIENT TEMPERATURE
OPERATOR SODERBERG

COMMENTS:

PRE LK CK → PASS
POST LKCK → PASS

RUN / GAS	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb/lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	11.2	11.2	11.3	11.3	11.3	11.3	11.27	44/100	
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	19.4	8.2	19.5	8.2	19.5	8.2	8.2	32/100	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)								28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)								28/100	
								TOTAL	

EPA (Dur) 230
4/72

M70

INTEGRATED GAS SAMPLING DATA FORM

Plant MERC
Sampling Location OUTLET
Sample Container Type ALUMINIZED MYLAR
Sample Bag I.D. No.
Date 12-12-87
Operator SODERBERG
Test No. 3
Barometric Pressure

Flow Meter: Type ROTOMETER 602
I.D. 1048
Pump: Type GAST
I.D. 40

Flow Control Device (Microvalve? Critical Orifice?) ROTOMETER
Desired Flow Rate (cc/min)

Total Sampling Time
Average Flow Rate (cc/-min, l/min)
Average Flow Meter Reading 75P
Estimated Actual Volume (liters)

Time 24 Hr Clock	Flow Meter Reading	Comments
11:22	75P	START PORT 2
11:30	75P	
11:40		STOP
12:07	75P	RESTART
12:15	75P	
12:25	75P	
12:36	75P	STOP
13:30	75P	START PORT 3
13:45	~~3PT~~ 75P	
14:00	75P	12" Hg
14:15	~~7P~~ 75P	12" Hg
14:26	75P	12" Hg
15:15	75P	12" Hg START PORT 1
15:23	STOP	
15:25	75P	RESTART
15:34	75P	12" STOP
		POST LK CK @ 12" Hg → PASS

DRY MOLECULAR WEIGHT DETERMINATION

PLANT MERC
DATE 12-12-87
SAMPLING TIME (24-hr CLOCK) 11:22 - 18:34
SAMPLING LOCATION OUTLET
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS GRAB) INTEGRATED
ANALYTICAL METHOD ORSAT
AMBIENT TEMPERATURE
OPERATOR SODERBERG

COMMENTS:

PRE LK CK -> PASS

POST LK CK -> PASS

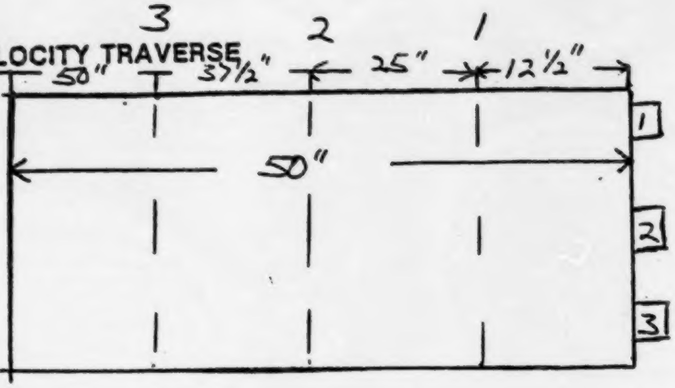
RUN / GAS	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb/lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	11.3	11.3	11.3	11.3	11.3	11.3	11.3	44/100	
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	19.4	8.1	19.5	8.2	19.5	8.2	8.17	32/100	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)								28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)								28/100	
								TOTAL	

M 83

EPA (Dur) 230
4/72

D.8 Preliminary Velocity Traverse Data

PRELIMINARY VELOCITY TRAVERSE



SCHEMATIC OF TRAVERSE POINT LAYOUT

PLANT MERC
DATE 12-7-87
…TION Inlet
…CK I.D. 50"
BAROMETRIC PRESSURE, IN. Hg
SITE TO BARO. ELEVATION (ft.)
CORRECTED BARO. PRESSURE
TEMPERATURE METER NO. ~~TS16~~ DB 9519
THERMOCOUPLE I.D. NO. T-19
PITOT(Cp) S-11
TIME (24 HR.) 0930
OPERATORS March, Griffin, Klamm
STACK GAUGE PRES. (STATIC, IN. H_2O)
PITOT LEAK CK. AT ≥ 3" H_2O)
REMARKS: Ambient Temp 74°F
Leak check Ⓐ 10" H_2O OK

TRAVERSE POINT NUMBER	Total Pressure ~~VELOCITY HEAD ΔPs.~~ IN. H_2O	STACK TEMP. T_s, °F	CYCLONIC FLOW DET. ~~ΔPs AT 0° REFERENCE~~	CYCLONIC FLOW DET. ANGLE (α) WHICH YIELDS A NULL ΔP
1-1	8½"	DG ~~385~~ 369	1.2"	+88°
1-2	8.8	~~388~~ DG 374	1.2	90°
1-3	8 —	~~389~~ DG 376	1.2	90°
2-1	8.5	~~387~~ DG 377	1.2	-84°
2-2	8.4	~~389~~ DG 378	1.3	-83°
2-3	8.4	~~389~~ DG 374	1.3	90°
3-1	8.0	~~379~~ DG 373	1.1	90°
3-2	8.5	~~379~~ DG 374	1.0	-86°
3-3	8.0	~~380~~ DG 369	0.8	+87°
AVERAGES				

TRAVERSE POINT NUMBER	VELOCITY HEAD ΔPs. IN. H_2O	STACK TEMP T_s, °F	CYCLONIC FLOW DET. ΔPs AT 0° REFERENCE	CYCLONIC FLOW DET. ANGLE (α) WHICH YIELDS A NULL ΔP
AVERAGES				

DP 1.3
TP -8.4
Cp 0.84

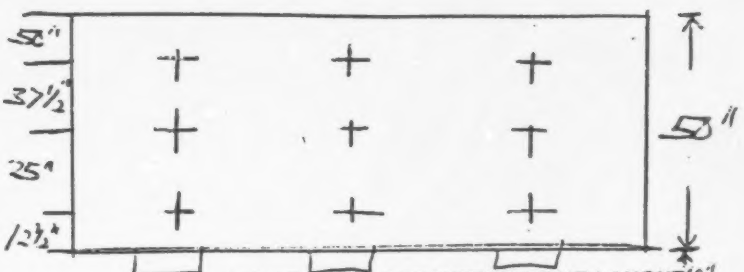
$-8.4 - (1.3 \times .84^2)$
Static = -9.3

* AVERAGE OF α MUST BE ≤10 DEGREES TO BE ACCEPTABLE

PRELIMINARY VELOCITY TRAVERSE

PLANT MERC
DATE 12/7/81
ATION Stack Outlet
ACK I.D. 50"
BAROMETRIC PRESSURE, IN. Hg 30.17
SITE TO BARO. ELEVATION (ft.) NA
CORRECTED BARO. PRESSURE 30.17
TEMPERATURE METER NO. 9517
THERMOCOUPLE I.D. NO. T-19
PITOT(Cp)
TIME (24 HR.) 1140
OPERATORS March - Griffin
STACK GAUGE PRES (STATIC, IN. H_2O) 20.3
PITOT LEAK CK. AT ≥ 3" H_2O)

REMARKS:



SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD ΔP_s, IN H_2O	STACK TEMP. T_s, °F	CYCLONIC FLOW DET. ΔP_s AT 0° REFERENCE	CYCLONIC FLOW DET. ANGLE (α) WHICH YIELDS A NULL ΔP
1-1	0.8	289	.05	+7°
1-2	0.9	290	.00	0°
1-3	1.0	290	.05	-5°
2-1	0.7	283	.00	0°
2-2	1.0	283	.00	0°
2-3	0.9	287	.00	0°
3-1	20.6 .7	290	.05	+10°
3-2	0.7	290	.05	-7°
3-3	0.7	290	.10	+5°
			~~.00~~	~~0~~ Jx
AVERAGES				*

TRAVERSE POINT NUMBER	VELOCITY HEAD ΔP_s, IN. H_2O	STACK TEMP T_s, °F	CYCLONIC FLOW DET. ΔP_s AT 0° REFERENCE	CYCLONIC FLOW DET. ANGLE (α) WHICH YIELDS A NULL ΔP
AVERAGES				*

* AVERAGE OF α MUST BE ≤10 DEGREES TO BE ACCEPTABLE

D.9 Proof/Blank Trains Set-up/Recovery

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. pre-run Blank

Sampling Location: Unit A,

Sampling Train No. 1

Sample Box No. 10288

Sample Box Set Up Date/Person: 12-4-87 / Kinner

Sample Box Leak Check: .006 cfm @ 15 in. Hg vacuum

Train to be used for:
Source Sample
[✓ Pre-Run Proof Blank]
Post-Run Proof Blank
Sampling Location Blank

	TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	
	Nozzle	N/A		
	Probe	1		
	♀ Probe Blank-off	1		
	♂ S-T Line Blank-off	1		
	Glass Union	1		
	Sample Transfer Line	1		
	♀ S-T Line Blank-off	BL-1		
	Long 90° Adapter	— NA		
	Cyclone	CY-109		
	Flask	CF-108		
	Filter Holder Front	F-109	Filter Number:	
	Filter Holder Back	F-1	NA	Initial Weight (grams)
	Short 90° Adapter	E-1		
(1)	1st Impinger Mod-GBS	B-1	Empty	
	U-Adapter (A)	U-1		
(2)	2nd Impinger GBS	B-2	100 mls 5% HNO_3/10% H_2O_2	
	U-Adapter (B)	U-2		
(3)	3rd Impinger GBS	~~E-102~~ 12-4-87 B-3	100 mls 5% HNO_3/10% H_2O_2	NA
	U-Adapter (C)	U-3		
	4th Impinger GBS	E-102	100 mls acidic $KMnO_4$	
	U-Adapter (D)	12-4-87 U-115		
	5th Impinger GBS	B-107	100 mls 0.5 N NaOH	
	U-Adapter (E)	U-5		
	6th Impinger Mod-GBS	B-121	~200g Silica gel	
	Gooseneck	UH-6		

Components exchanged during run:

m1

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. pre-run Blank
Sampling Location: Unit A,
Sampling Train No. 1
Sample Box No. 10288
Sample Box Recovery Date/Person 12-~~6~~5-87 / Kinner LLK
~~Nozzle~~/Probe/Sample Transfer Line Recovery Date/Persons 12-7-87 Morch Griffin Cummins

Train was used for: ~~pre-run proof~~ Blank

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)	N/A	N/A	N/A	N/A	N/A	N/A	
Initial Wt.(g)							
Net Wt. (g)							
Description/ Color	NA	→	→	→	→	→	
Sample Bottle Tare Wt. (g)		~~N/A~~ LLK 12-5-87 461.1g		461.1g ~~N/A~~ LLK 12-5-87	~~N/A~~ LLK 12-5-87	~~461.1g~~ LLK 60.6g	
Sample Number		11007 *		11008 *	11009		
Rinse Solution		0.1N HNO_3		acid $KMnO_4$	D.I. H_2O		
Components Rinsed:	Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)			Impinger Adapt(C)	Impinger Adapt(D)		
Check pH~2		✓					
Sample Bottle Final Wt. (g)		*					
Net Wt. (g)							

*See Lab note book for Tare wt. AVE

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1g	461.1g			461.1g	461.1g
Sample Number	11001	11002	NA	11004	11005	11006
Rinse Sol'n***	Acetone	0.1N HNO_3	(no Catch)		Acetone	0.1N HNO_3
Ckeck pH~2		✓				✓
Sample Bottle Final Wt. (g)						
Net Wt. (g)						

see LAB notebook

** Nozzles are not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

M2

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. Pre-Run Blank

Sampling Location: Unit A,

Sampling Train No. 2

Sample Box No. 10286

Sample Box Set Up Date/Person: 12-4-87

Sample Box Leak Check: .006 cfm @ 15 in. Hg vacuum

Train to be used for:
Source Sample
[✓ Pre-Run Proof Blank]
Post-Run Proof Blank
Sampling Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N/A		
Probe	2		
♀ Probe Blank-off	2		
♂ S-T Line Blank-off	2		
Glass Union	2		
Sample Transfer Line	2		
♀ S-T Line Blank-off	BL-2		
Long 90° Adapter	NA		
Cyclone	CY-107		
Flask	CF-105		
Filter Holder Front	F-104	Filter Number:	
Filter Holder Back	F-210	NA	
Short 90° Adapter	F-211		
1st Impinger Mod-GBS	B-111	Empty	
U-Adapter (A)	U-4		
4 2nd Impinger GBS	B-4	100 mls 5% HNO_3/10% H_2O_2	NA
U-Adapter (B)	U-6		
5 3rd Impinger GBS	B-5	100 mls 5% HNO_3/10% H_2O_2	
U-Adapter (C)	U-7		
4th Impinger GBS	B-109	100 mls acidic $KMnO_4$	
U-Adapter (D)	U-8		
6 5th Impinger GBS	B-6	100 mls 0.5 N NaOH	
U-Adapter (E)	U-9		
6th Impinger Mod-GBS	B-150	~200g Silica gel	
Gooseneck	UH-3		

Components exchanged during run:

M3

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME

Train was used for: pre-Run-Blank

Run No. pre-Run Blank
Sampling Location: Unit A,
Sampling Train No. 2
Sample Box No. 10286
Sample Box Recovery Date/Person 12-~~4~~ 5-87
~~Nozzle~~/Probe/Sample Transfer Line Recovery Date/Persons 12-7-87 March Crittin Cummins

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)							
Initial Wt.(g)	W	A	W	A	W	A	
Net Wt. (g)							
Description/ Color	—	—	<— WA —>	—	—	—	
Sample Bottle Tare Wt. (g)		461.1g		461.1g.	60.6g		
Sample Number		12007*		12008*	12009		
Rinse Solution		0.1N HNO_3		acid $KMnO_4$	D.I. H_2O		
Components Rinsed:		Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)		Impinger Adapt(C)	Impinger Adapt(D)		
Check pH~2		✓					
Sample Bottle Final Wt. (g)		*					
Net Wt. (g)							

*See PM notebook for TAre wts

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1g	461.1g			461.1g	461.1g
Sample Number	12001	12002	WA	12004	12005	12006
Rinse Sol'n***	Acetone	0.1N HNO_3	no catch		Acetone	0.1N HNO_3
Ckeck pH~2		✓				
Sample Bottle Final Wt. (g)	*					
Net Wt. (g)						

*See PM note book for tare wts.

** Nozzles are not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

M4

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Train to be used for:
~~Source Sample~~
[✓ Pre-Run Proof Blank]
Post-Run Proof Blank
Sampling Location Blank

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. Pre-Run Blank
Sampling Location: Unit A,
Sampling Train No. 3
Sample Box No. 10283
Sample Box Set Up Date/Person: 12-5-87 / Kinner
Sample Box Leak Check: .005 cfm @ 15 in. Hg vacuum

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N/A		
Probe	3		
♀ Probe Blank-off	3		
♂ S-T Line Blank-off	~~3~~ N/A		
Glass Union	~~3~~ N/A		
Sample Transfer Line	~~3~~ N/A		
♀ S-T Line Blank-off	BL-3		
Long 90° Adapter	— NA		
Cyclone	CY 101		
Flask	CF 103		
Filter Holder Front	F108	Filter Number:	
Filter Holder Back	F 205	NA	
Short 90° Adapter	E-2		
1st Impinger Mod-GBS	B-7	Empty	
U-Adapter (A)	U-10		
2nd Impinger GBS	B-135	100 mls 5% HNO_3/10% H_2O_2	
U-Adapter (B)	U-11		NA
3rd Impinger GBS	B-8	100 mls 5% HNO_3/10% H_2O_2	
U-Adapter (C)	U-12		
4th Impinger GBS	B-9	100 mls acidic $KMnO_4$	
U-Adapter (D)	U-13		
5th Impinger GBS	I-109	100 mls 0.5 N NaOH	
U-Adapter (E)	U-14		
6th Impinger Mod-GBS	B-131	~200g Silica gel	
Gooseneck	UH-9		

Components exchanged during run:

M5

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME

Train was used for: ~~pre-run~~ first Blank

Run No. pre-Run Blank
Sampling Location: Unit A,
Sampling Train No. 3
Sample Box No. 10283
Sample Box Recovery Date/Person 12-5-87 / Kinner LLK
~~Nozzle~~/Probe/Sample Transfer Line Recovery Date/Persons 12-7-87 / March Griffin Cummins

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)							
Initial Wt.(g)		NA		NA	NA		
Net Wt. (g)							
Description/ Color	NA						
Sample Bottle Tare Wt. (g)		461.1g		461.1g	~~461.1g~~ LLK	60.6g	
Sample Number		13007*		13008*	13009		
Rinse Solution		0.1N HNO_3		acid $KMnO_4$	D.I. H_2O		
Components Rinsed:		Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)		Impinger Adapt(C)	Impinger Adapt(D)		
Check pH<2		✓					
Sample Bottle Final Wt. (g) *							
Net Wt. (g)							

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1g	461.1g			461.1g	461.1g
Sample Number	13001	13002	NA	13004	13005	13006
Rinse Sol'n***	Acetone	0.1N HNO_3	(no catch)		Acetone	0.1N HNO_3
Ckeck pH<2		✓				✓
Sample Bottle Final Wt. (g) *						
Net Wt. (g)						

** Nozzles are not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

* See pm notebook for tare wts.

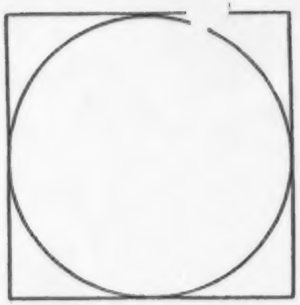
M6

FIELD ATA

RUN NO. 0-Metals Blank
PROJECT NO. 86110 C.
PLANT MERC.
DATE 12/9/87
SAMPLING LOCATION Scrubber-Inlet.
SAMPLE TYPE MS Blank.
OPERATOR Cummins/Klamm
FILTER NO.
RECORD DATA EVERY ______ MIN.
UMBILICAL/SAMPLER HOOKUP

PROBE NO. Metals 1
PROBE LENGTH AND TYPE 1½ -3 ft glass
SAMPLE BOX NO.
METER BOX NO.
TEMP. CONTROLLER NO.
TEMP. METER NO.
THERMOCOUPLE I.D. NO.
UMBILICAL CORD I.D. NO.
UMBILICAL CORD I.D. NO.
NOZZLE NO.

NOZZLE DIA.
ASSUMED MOISTURE %
METER ΔH @
METER CORRECTION
PITOT NO.
PITOT COEFFICIENT
BAROMETRIC PRESSURE
SITE TO BARO. ELEVATION (ft.)
CORRECTED B.P. (0.1 in./100 ft.)
STATIC PRESSURE



SCHEMATIC OF TRAVERSE POINT LAYOUT

Train #1
Sample Location Blank

PITOT LEAK CHECK ≥3" H_2O

		INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1100						
PASS/FAIL	PASS						

PITOT LEAK CHECK ≥3" H_2O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	11:44	13:27	13:27	13:34	13:38
VACUUM, in. Hg	≥15"	=15"	≥15"	=15"	≥15"
CFM	0.02	0.02	0.02	0.025	
VOLUMES					
FINAL		650.52		650.70	651.04
INITIAL		650.45		650.52	650.70
DIFFERENCE					

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	13:40				
VACUUM, in. Hg		≥15"		≥15"	
CFM					
VOLUMES					
FINAL	651.16		651.33		
INITIAL	SIC ~~650.70~~ 651.04		651.16		
DIFFERENCE					

INITIAL VOLUME 650.45 sic 650.45
FINAL VOLUME
LEAK CHECK VOLUME
ADJUSTED FINAL VOLUME

m7

COMMENTS

Revision 11/15/86

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. ~~1~~ N/A

Sampling Location: Unit A, Inlet Metals

Sampling Train No. 1 BC

Sample Box No. 10287

Sample Box Set Up Date/Person: 12-8-87/Kinner

Sample Box Leak Check: 0.002 cfm @ 15 in. Hg vacuum

Train to be used for:
Source Sample
Pre-Run Proof Blank
Post-Run Proof Blank
[✓ Sampling Location Blank]

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N/A		
Probe	1		
♀ Probe Blank-off	1		
♂ S-T Line Blank-off	1		
Glass Union	1		
Sample Transfer Line	1		
♀ S-T Line Blank-off	BL-1		
Long 90° Adapter	—		
Cyclone	CY 109		
Flask	CF 108		
Filter Holder Front	F-207	Filter Number:	
Filter Holder Back	F-7	Pm 8	
Short 90° Adapter	F-2		
1st Impinger Mod-GBS	B-20	Empty	
U-Adapter (A)	U-11		
2nd Impinger GBS	B 118	100 mls	
U-Adapter (B)	U-25	5% HNO_3/10% H_2O_2	
3rd Impinger GBS	I 217	100 mls	N/A
U-Adapter (C)	U-26	5% HNO_3/10% H_2O_2	
4th Impinger GBS	~~B118~~ B-122	100 mls	
U-Adapter (D)	U-27	acidic $KMnO_4$	
5th Impinger GBS	B 7	100 mls	
U-Adapter (E)	U-28	0.5 N NaOH	
6th Impinger Mod-GBS	I-310	~200g Silica gel	
Gooseneck	UH-9		

Components exchanged during run:

new train, NEW proof Rinse

M8

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. N/A

Sampling Location: Unit A, Outlet

Sampling Train No. I

Sample Box No. 10287

Sample Box Recovery Date/Person 12-8-87 Kinned

~~Nozzle~~/Probe/Sample Transfer Line Recovery Date/Persons 12/8/87 Mann Griffin Cummins

Train was used for:
Metals Outlet BETR
Sampling Location Blank

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)							
Initial Wt.(g)							
Net Wt. (g)							
Description/ Color		NO	WtS.	TAKEN			
Sample Bottle Tare Wt. (g)		461.1		461.1	461.1		
Sample Number		~~11007~~ 15007* wic		~~11008~~ 15008*	~~11009~~	wic 15009	
Rinse Solution		0.1N HNO$_3$		acid KMnO$_4$	D.I. H$_2$O		
Components Rinsed:		Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)		Impinger Adapt(C)	Impinger Adapt(D)		
Check pH~2		✓					
Sample Bottle Final Wt. (g)							
Net Wt. (g)							

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter #8	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	461.1			461.1	461.1
Sample Number	wic ~~11001~~ 15001	~~11002~~ 15002 wic	—	~~11004~~ 15004 wic	~~11005~~ 15005	~~11006~~ 15006
Rinse Sol'n***	Acetone	0.1N HNO$_3$			Acetone wic	0.1N HNO$_3$ wic
Ckeck pH~2		✓				✓
Sample Bottle Final Wt. (g)						
Net Wt. (g)						

15000 ~~11000~~

** Nozzles are not to be rinsed with acid.

*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

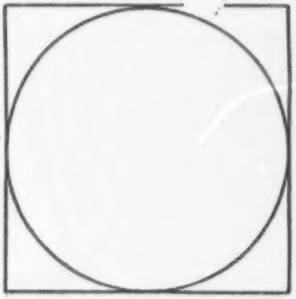
m9

FIELD \TA

RUN NO. 1
PROJECT NO. 8410
PLANT MERC
DATE Dec 9, 1987
SAMPLING LOCATION Outlet
SAMPLE TYPE Blank, Metals
OPERATOR MARCK
FILTER NO.
RECORD DATA EVERY 5 MIN.
UMBILICAL/SAMPLER HOOKUP

PROBE NO.
PROBE LENGTH AND TYPE 1.5' glass
SAMPLE BOX NO. 5418 (1)
METER BOX NO. 10 & 2 (6)
TEMP. CONTROLLER NO. ~~9517~~ 9032
TEMP. METER NO. 9517
THERMOCOUPLE I.D. NO.
UMBILICAL CORD I.D. NO. LL 50 10
UMBILICAL CORD I.D. NO. —
NOZZLE NO. —

NOZZLE DIA.
ASSUMED MOISTURE %
METER ΔH @ 1.923
METER CORRECTION 1.0[illegible] Du
PITOT NO.
PITOT COEFFICIENT
BAROMETRIC PRESSURE
SITE TO BARO. ELEVATION (ft.)
CORRECTED B.P. (0.1 in./100 ft.)
STATIC PRESSURE



SCHEMATIC OF TRAVERSE POINT LAYOUT

PITOT LEAK CHECK ≥ 3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

PITOT LEAK CHECK ≥ 3" H₂O

	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)						
PASS/FAIL						

SAMPLE TRAIN LEAK CHECKS

	INITIAL	FINAL	INITIAL	FINAL	INITIAL
TIME (24 hr)	1140 305.490	1342 4.797	1344 4.935	1345 5.117	1346 5.320
VACUUM, In. Hg	≥15" 16"	10"	≥15" 15"	10"	≥15"
CFM	.001	.005	.005	.005	.005
VOLUMES	305.894	4.935	5.117	5.320	5.570
FINAL					
INITIAL					
DIFFERENCE					

SAMPLE TRAIN LEAK CHECKS

	FINAL	INITIAL	FINAL	INITIAL	FINAL
TIME (24 hr)	1348 5.570				
VACUUM, In. Hg	10"	≥15"		≥15"	
CFM	.005				
VOLUMES	5.620				
FINAL					
INITIAL					
DIFFERENCE					

INITIAL VOLUME -305.667
FINAL VOLUME
LEAK CHECK VOLUME
ADJUSTED FINAL VOLUME

MII

COMMENTS

Revision 11/18/86

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. ~~2~~ N/A
Sampling Location: Unit A, outlet metals
Sampling Train No. I ①
Sample Box No. 10287
Sample Box Set Up Date/Person: 12-8-87 / Kinnes
Sample Box Leak Check: 0.004 cfm @ 15 in. Hg vacuum

Train to be used for:
Source Sample
Pre-Run Proof Blank
Post-Run Proof Blank
[✓ Sampling Location Blank]

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle	N/A		
Probe	1		
♀ Probe Blank-off	1		
♂ S-T Line Blank-off	N/A		
Glass Union	N/A		
Sample Transfer Line	N/A		
♀ S-T Line Blank-off	BL-1		
Long 90° Adapter	E-104		
Cyclone	NA		
Flask	NA		
Filter Holder Front	F-207	Filter Number: ~~UK~~ ~~NA~~ NA no Filter # on Glass	
Filter Holder Back	F-7		
Short 90° Adapter	F-2		
1st Impinger Mod-GBS	B-20	Empty	
U-Adapter (A)	U-11		
2nd Impinger GBS	B-118	100 mls 5% HNO_3/10% H_2O_2	
U-Adapter (B)	U-25		
3rd Impinger GBS	I-217	100 mls 5% HNO_3/10% H_2O_2	
U-Adapter (C)	U-36		
4th Impinger GBS	B-122	100 mls acidic $KMnO_4$	N/A
U-Adapter (D)	U-27		
5th Impinger GBS	B-7	100 mls 0.5 N NaOH	
U-Adapter (E)	U-28		
6th Impinger Mod-GBS	I-310	~200g Silica gel	
Gooseneck	UH-9		

Components exchanged during run:

m12

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 2 M
Sampling Location: Unit A, outlet
Sampling Train No. I
Sample Box No. 10287
Sample Box Recovery Date/Person 12-9-87
~~Nozzle~~/Probe/Sample Transfer Line Recovery Date/Persons 12-9-87 March, Griffin Cummins

Train was used for: outlet metals Blank Sampling Location Blank

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)							
Initial Wt. (g)	473.7	594.1	593.5	546.1	537.0	~~592.7~~ 637.0	
Net Wt. (g)							
Description/ Color							
Sample Bottle Tare Wt. (g)		461.1		461.1	461.1		
Sample Number		16007 ~~1006~~		16005 ~~1008~~	16007 ~~1009~~		
Rinse Solution		0.1N HNO_3		acid $KMnO_4$	D.I. H_2O		
Components Rinsed:		Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)		Impinger Adapt(C)	Impinger Adapt(D)		
Check pH~2		✓					
Sample Bottle Final Wt. (g)							
Net Wt. (g)							

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	461.1			~~461.1~~	461.1
Sample Number	16001 ~~1001~~	16002 ~~1002~~	~~1003~~	16004	16005 ~~1005~~	16006 ~~1006~~
Rinse Sol'n***	Acetone	0.1N HNO_3	no catch		Acetone	0.1N HNO_3
Ckeck pH~2		✓				
Sample Bottle Final Wt. (g)						
Net Wt. (g)						

16000 ✓

** Nozzles are not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

m13

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. 4

Sampling Location: Unit A, Outlet

Sampling Train No. 2

Sample Box No. 10287

Sample Box Set Up Date/Person: 12-11-87 L. Kinner

Sample Box Leak Check: 0.007 cfm @ 15 in. Hg vacuum

Train to be used for:
~~Source Sample~~ SLK
~~Pre-Run Proof Blank~~
[✓ Post-Run Proof Blank]
~~Sampling Location Blank~~

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle			
Probe			
♀ Probe Blank-off			
♂ S-T Line Blank-off			
Glass Union			
Sample Transfer Line			
♀ S-T Line Blank-off	BL-2		
Long 90° Adapter	NA		
Cyclone	CY 109		
Flask	CE-108		
Filter Holder Front	F-207	Filter Number:	
Filter Holder Back	F-7	PM-11	
Short 90° Adapter	E-2		
1st Impinger Mod-GBS	B-20	Empty	
U-Adapter (A)	U-11		
2nd Impinger GBS	B-118	100 mls	
U-Adapter (B)	U-25	5% HNO_3/10% H_2O_2	
3rd Impinger GBS	I-217	100 mls	
U-Adapter (C)	U-26	5% HNO_3/10% H_2O_2	
4th Impinger GBS	B-122	100 mls	
U-Adapter (D)	U-27	acidic $KMnO_4$	
5th Impinger GBS	B-7	100 mls	
U-Adapter (E)	U-28	0.5 N NaOH	
6th Impinger Mod-GBS	I-310	~200g Silica gel	
Gooseneck	U17-9		

Components exchanged during run:

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 4
Sampling Location: Unit A, Inlet metals
Sampling Train No. 2
Sample Box No. 10387
Sample Box Recovery Date/Person 12-14-87 B Kinner
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-14-87 G Hamm

Train was used for: ~~Source~~ Inlet
Post Bits metals

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)							
Initial Wt.(g)	480.0	611.8	614.2	547.4	574.5	603.3	
Net Wt. (g)							
Description/ Color	NO WK						
Sample Bottle Tare Wt. (g)		461.1		464	606		
Sample Number		17007		17008	17009		
Rinse Solution		0.1N HNO,		acid KMnO,	D.I. H_2O		
Components Rinsed:		Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)		Impinger Adapt(C)	Impinger Adapt(D)		
Check pH~2		✓					
Sample Bottle Final Wt. (g)		*					
Net Wt. (g)							

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	461.1		//	461.1	461.1
Sample Number	17001	17002	NA	17004	17005	17006
Rinse Sol'n***	Acetone	0.1N HNO,			Acetone	0.1N HNO,
Ckeck pH~2						
Sample Bottle Final Wt. (g)	*					
Net Wt. (g)						

** Nozzles are not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

* weigh @ MRC

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB SET UP DATA

Project No. 8910 L (02-12)

Plant: Maine Energy Recovery Co., Biddeford, ME

Run No. 4

Sampling Location: Unit A. outlet metals

Sampling Train No. 5

Sample Box No. 10288

Sample Box Set Up Date/Person: 12-13-87 Kumer

Sample Box Leak Check: 0.005 cfm @ 15 in. Hg vacuum

Train to be used for:
~~Source Sample(s)~~
Pre-Run Proof Blank
[✓ Post-Run Proof Blank]
Sampling Location Blank

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weight (grams)
Nozzle			
Probe			
@ Probe Blank-off			
@ S-T Line Blank-off			
Glass Union			
Sample Transfer Line			
@ S-T Line Blank-off	Bl-1		
Long 90° Adapter	E-216		
Cyclone	NA		
Flask			
Filter Holder Front	F-109	Filter Number:	
Filter Holder Back	F-1		
Short 90° Adapter	E-1		
1st Impinger Mod-GBS	B-1	Empty	
U-Adapter (A)	U-140		
2nd Impinger GBS	B-2	100 mls 5% HNO_3/10% H_2O_2	
U-Adapter (B)	U-2		
3rd Impinger GBS	B-3	100 mls 5% HNO_3/10% H_2O_2	
U-Adapter (C)	U-3		
4th Impinger GBS	T-102	100 mls acidic $KMnO_4$	
U-Adapter (D)	U-115		
5th Impinger GBS	B-107	100 mls 0.5 N NaOH	
U-Adapter (E)	U-5		
6th Impinger Mod-GBS	B-121	~200g Silica gel	
Gooseneck	UH-6		

Components exchanged during run:

MODIFIED METHOD 5 TRAIN
PARTICULATE/METALS SAMPLING
FIELD LAB RECOVERY DATA

Project No. 8910 L (02-12)
Plant: Maine Energy Recovery Co., Biddeford, ME
Run No. 4
Sampling Location: Unit A, ~~Outlet~~ UK
Sampling Train No. 3
Sample Box No. 10288
Sample Box Recovery Date/Person 12-14-87 D. Kunner
Nozzle/Probe/Sample Transfer Line Recovery Date/Persons 12-14-87 Gaffler / Cummins

Train was used for:
Outlet MM5
post test rinse
Blks

BACK HALF RECOVERY

Impinger	1st	2nd	3rd	4th	5th	6th	Condensate Collected (grams)
Final Wt. (g)							
Initial Wt. (g)	513.6	608.1	588.9	588.1	548.3	625.5	
Net Wt. (g)							
Description/ Color	NO wts.						
Sample Bottle Tare Wt. (g)		461.1		461.1	~~461.1~~ UK	60.56	
Sample Number		18007*		18008*	18009		
Rinse Solution		0.1N HNO_3		acid $KMnO_4$	D.I. H_2O		
Components Rinsed:	Filter Support Filter Holder back Short 90° Adapter 1st,2nd,3rd Impingers U-Adapters (A and B)			Impinger Adapt(C)	Impinger Adapt(D)		
Check pH<2		✓					
Sample Bottle Final Wt. (g)		*					
Net Wt. (g)							

* Do not fill sample bottles full; vent samples after recovery, before & after shipment.

FRONT HALF RECOVERY

Component	Nozzle Probe Glass Union S-T Line	Probe** Glass Union S-T Line	Cyclone Flask (loose contents)	Filter	Lg 90°Adapt Cyclone Filter Holder Frnt	Lg 90°adapt Cyclone Filter Holder Front
Sample Bottle Tare Wt. (g)	461.1	461.1			461.1	461.1
Sample Number	18001	18002	NA	18004	18005	18006
Rinse Sol'n***	Acetone	0.1N HNO_3			Acetone	0.1N HNO_3
Ckeck pH<2		✓				✓
Sample Bottle Final Wt. (g)	*					
Net Wt. (g)						

** Nozzles are not to be rinsed with acid.
*** Acetone rinses (with Brushing) precede acid rinses (no brushing).

* weigh @ MEI

APPENDIX E

ASH, LIME SLURRY, AND RDF FIELD DATA

E.1 Baghouse Ash E-2
E.2 Cyclone Ash E-18
E.3 Bottom Ash E-28
E.4 Refuse-Derived Fuel E-36
E.5 Lime Slurry E-40

E.1 Baghouse Ash

BAGHOUSE DISCHARGE
Metals

Run No. 1

Plant MERC

Date 9 DEC. 87

Sampler RCN

Project No. 8910 L0212

Sample No. 1036

Time	Comments
16:30	1 Scoop
17:28	1 Scoop
1820	1 Scoop

BAGHOUSE DISCHARGE
%C, %Comb

Run No. 1
Date 9DEC 87
Project No. 8910 L0212
Plant MERC
Sampler RCN
Sample No. 1037

Time	Comments
16:30	1 scoop
17:28	1 Scoop
18:20	1 Scoop

BAGHOUSE DISCHARGE
organics

Run No. 1

Date 9DEC87

Project No. 8910L0212

Plant MERC

Sampler RCN

Sample No. 1038

Time	Comments
16:30	1 Scoop
17:28	1 Scoop
18:20	1 Scoop

BAGHOUSE DISCHARGE
Resistivity

Run No. 1

Date 9DEC87

Project No. 8910 L0212

Plant MERC

Sampler RCN

Sample No. 1069

Time	Comments
16:30	1 scoop
17:28	1 Scoop
18:20	1 Scoop

x

Fabric Filter
BAGHOUSE DISCHARGE
K-Factor

Run No. 1
Date 9 Dec 87
Project No. 89106-0212

Plant Merk
Sampler RCN
Sample No. 1073

2 - 1gal pails

Time	Comments*
16:30	1 - 5gal Pail 90% full
17:28	1 - 5gal Pail 90% full

10DEC.87 (RCN) The Above two samples were stored overnight in 5gal pails with lids attached. The material in both containers ~~was~~ were double bagged in plastic and resealed in the same containers. This took place at 17:10, 10DEC87

BAGHOUSE DISCHARGE
METALS

Run No. 2
Date 10 DEC 87
Project No. 891020212
Plant MERC
Sampler RCN
Sample No. 2036

Time	Comments
13:40	1 scoop (≈200cc)
14:25	" "
15:40	" " "
16:35	" " "
17:50	" " "
18:30	" " "

BAGHOUSE DISCHARGE
%C, % COMB

Run No. 2
Date 10 DEC 87
Project No. 8910L0212
Plant MERC
Sampler RCN
Sample No. 2037

Time	Comments
13:40	1 Scoop (≈ 200 ml)
14:25 ~~14:20~~	1 Scoop " "
15:40	" " " "
16:35	" " " "
17:50	" " " "
18:20	" " " "

BAGHOUSE DISCHARGE
ORGANICS

Run No. 2
Plant MERC
Date 10 DEC 87
Sampler RCN
Project No. 8910L0212
Sample No. 2038

Time	Comments
13:40	1 scoop (≈ 200 ml)
14:25	1 Scoop " "
15:40	" " " "
16:35	" " " "
17:50	" " " "
18:30	" " " "

BAGHOUSE DISCHARGE
Resistivity

Run No. 2

Plant MERC

Date 10 DEC 87

Sampler RCN

Project No. 8910602112

Sample No. 2069

Time	Comments
13:40	1 scoop (≈ 200cc)
14:25	" "
15:40	" "
16:35	" "
17:50	" "
18:30	" "

BAGHOUSE DISCHARGE
K-Factor

Run No. 2
Date 10 Dec 87
Project No. 8910L0212
Plant MERC
Sampler RCN
Sample No. 2073

Time	Comments
14:23	1 - 5gal Pail
~~16:35~~ 16:35	1 - 5gal Pail

BAGHOUSE DISCHARGE

Metals

Run No. 3

Date 12-DEC-87

Project No. 8910L0212

Plant MERC

Sampler RCN

Sample No. 3036

Time	Comments
13:10	1 scoop
14:00	" "
15:00	" "
18:30	" "

BAGHOUSE DISCHARGE

%C

Run No. 3

Date 12 DEC 87

Project No. 896020212

Plant MERC

Sampler RCN

Sample No. 3037

Time	Comments
13:10	1 scoop
14:00	" "
15:00	" "
16:30	" "

BAGHOUSE DISCHARGE
Organics

Run No. 3
Date 12 DEC 83
Project No. 8910L0212

Plant MERC
Sampler RCW
Sample No. 3038

Time	Comments
13:10	1 scoop
14:00	" "
15:00	" "
18:30	" "

BAGHOUSE DISCHARGE
Resistivity

Run No. 3

Date 12 DEC 87

Project No. 8910L0212

Plant MERC

Sampler RCN

Sample No. 3069

Time	Comments
13:10	1 Scoop
14:00	" "
15:00	" "
16:30	" "

BAGHOUSE DISCHARGE
K-factor

Run No.	3	Plant	MERC
Date	12 DEC 87	Sampler	RCW
Project No.	8910L0212	Sample No.	~~8~~ 3073

Time	Comments
13:00	1-5 gal pail
15:00	1-5 gal pail

E.2 Cyclone Ash

CYCLONE ASH SAMPLING
Metals

Run No. 1
Plant MERC
Date 9DEC 87
Sampler RCN
Project No. 8910 L0212
Sample No. 1033

Time	Comments
16:20	1 scoop
17:08	1 Scoop
18:25	1/3 Scoop (All that could be
	obtained for sampling)

CYCLONE ASH SAMPLING

%C, % Comb.

Run No. 1
Date 9 DEC 87
Project No. 891010212
Plant MERC
Sampler RCN
Sample No. 1034

Time	Comments
16:20	1 Scoop
17:08	1 Scoop
18:25	1/3 Scoop (1/3 scoop was all that could be obtained for Sampling)

CYCLONE ASH SAMPLING

Organics

Run No. 1
Date 9DEC87
Project No. 8910-L0212
Plant MERC
Sampler RCN
Sample No. 1035

Time	Comments
16:20	One Scoop
17:08	1 Scoop
18:25	1/3 Scoop was all that could be obtained for sampling)

CYCLONE ASH SAMPLING

Metals

Run No. 2

Date 10 DEC 87

Project No. 8910L0212

Plant MERC

Sampler RCN

Sample No. 2033

Time	Comments
13:52	1/8 Scoop
14:22	1 Scoop (≈200ml)
15:35	" " " "
16:33	" " " "
17:45	" " ≈75ml
18:25	" " ≈75ml

CYCLONE ASH SAMPLING

%C, %Comb

Run No. 2
Date 10 DEC 87
Project No. 8960L0212
Plant MERC
Sampler RCN
Sample No. 2034

Time	Comments
13:52	1/8 Scoop
14:22	1 Scoop ≈ 200ml
15:35	" " "
16:33	" " "
17:45	" " ≈ 75ml
18:25	" " ≈ 75ml

A 5gal. pail was placed under the sampling valve for continuously collecting ash. It takes ≈ 40mins - 60mins to obtain enough sample for 3 splits.

CYCLONE ASH SAMPLING
ORGANICS

Run No. 2
Plant MERC
Date
Sampler RCN
Project No. 8910L0212
Sample No. 2035

Time	Comments
13:52	1/8 scoop
14:22	1 Scoop ≈ 200 ml
15:35	" " " "
16:33	" " " " ~~ml~~ EERCW 10DEC87
17:45	" " ≈ 75 ml
18:25	" " ≈ 75 ml

CYCLONE ASH SAMPLING

Metals

Run No. 3
Plant MEKC
Date 12 DEC 87
Sampler RCW
Project No. 8910L0212
Sample No. 3033

Time	Comments
13:10 to	see comments on
18:35	"cyclone ash sampling; %C"

CYCLONE ASH SAMPLING

%C

Run No. 3

Date 12 DEC 87

Project No. 8910202.12

Plant MERC

Sampler RCN

Sample No. 3034

Time	Comments
13:10 to 18:35	(-27 Jan 88) Very little cyclone ash was available ~~for~~ to be gathered for samples. A 5gal pail was placed under the open sampling port and left there ~~until~~ during the entire time noted. The sample gathered was split 3 ways evenly and placed in 3 containers for %C, Metals + Organics analysis.

CYCLONE ASH SAMPLING

Organics

Run No. 3

Date 12 DEC 87

Project No. 891020212

Plant MBRC

Sampler RCN

Sample No. 3035

Time	Comments
13:10 to	See comments on
18:35	"cyclone ash sampling, %C"

E.3 Bottom Ash

BOTTOM ASH SAMPLING

Metals

Run No. 1

Plant MERC

Date 9 DEC. 87

Sampler RCN

Project No. 8910-L0212

Sample No. 1042

Time	Comments
16:10	1 Scoop
17:05	1 Scoop
1810	" "

BOTTOM ASH SAMPLING
% C, % COMB

Run No. 1
Date 9 DEC 87
Project No. 8910 L0212

Plant MERC
Sampler RCN
Sample No. 1043

Time	Comments
16:10	1 Scoop
17:05	1 Scoop
18:10	" "

BOTTOM ASH SAMPLING
Organics

Run No. 1
Date 9DEC87
Project No. 8910L0212

Plant MERC
Sampler RCN
Sample No. 1044

Time	Comments
16:10	1 Scoop
17:05	1 Scoop
18:10	1 "

BOTTOM ASH SAMPLING

Metals

Run No. 2

Date 10 DEC 87

Project No. 8910L0212

Plant MERC

Sampler RCN

Sample No. 2042

Time	Comments
13:35	1 scoop (≈ 100cc)
14:20	1 Scoop " "
15:30	" " " "
16:30	" " " "
~~17:50~~	~~" " " "~~
	BB RCN 10DEC87

BOTTOM ASH SAMPLING

%C, %Comb

Run No. 2
Date 10 DEC 87
Project No. 8910L0212

Plant MERC
Sampler RCN
Sample No. 2043

Time	Comments
13:35	1 Scoop (≈ 200 cc)
14:20	1 Scoop " "
15:30	" " " "
16:30	" " " "
~~17:50~~	~~" " " "~~ BE RCN
	10DEC87

Process upset & Surman told RCN not to take any more samples post 16:30
Same applies to other Bottom Ash Samples sampled 10DEC87

BOTTOM ASH SAMPLING

Organics

Run No. 2

Date 10 DEC 87

Project No. 8910L0212

Plant MERC

Sampler RCN

Sample No. Organics 2044

Time	Comments
13:35	1 Scoop (≈200cc)
14:20	1 Scoop " "
15:30	1 Scoop " "
16:30	1 Scoop

BOTTOM ASH SAMPLING
Metals

Run No. 3
Date 12 DEC 87
Project No. 896L0212
Plant MERC
Sampler RCW
Sample No. 3042

Time | Comments

Bottom Ash was not sampled.
The Plant had difficulty during
the day, the project monitor,
G. Reiley) decided not to
take these samples: 3042
3043
3044.

E.4 Refuse-Derived Fuel

REFUSE-DERIVED FUEL (RDF) SAMPLING

Run No. 1
Plant MERC
Date 9 Dec 87
Sampler RCN
Project No. 8910 L0212
Sample No. 1045

Process + Reclaim

Time	Comments
16:05	1 grab shovel of Process RDF
~~18~~ 17:00	1 " " " " "
18:05	1 " " " " "

REFUSE-DERIVED FUEL (RDF) SAMPLING

Run No. Z
Date 12-10-87
Project No. 8910L0212
Plant MERC
Sampler ~~REN~~ BDM JFW
Sample No. 2045

Time	Comments
13:30	5 gal from each feed ram on Boiler A (Reclaim fuel).
14:45	Same as above.
15:55	" " "
16:55	" " " STARTED PROCESS LINE AT 17:00 HRS.

REFUSE-DERIVED FUEL (RDF) SAMPLING

Run No. 3
Date 12 DEC 87
Project No. 8910L0212
Plant MBRC
Sampler RCN
Sample No. ~~2045~~ 3045

Time	Comments
13:00	2 - 5gal pails Recycle
13:45	2 - " " "
14:50	2 " " "

E.5 Lime Slurry

LIME SLURRY
Metals

Run No. 1
Date 9 Dec 87
Project No. 891020212

Plant MERC
Sampler RCN
Sample No. 1046

Time	Comments
17:45	1 qt. Sample obtained

LIME SLURRY
% Solids

Run No. 1
Date 9 Dec. 87
Project No. 8910 L0212
Plant MERC
Sampler RCN
Sample No. 1071

Time	Comments
17:45	1 qt sample obtained

LIME SLURRY
Dioxins

Run No. 1
Date 9 Dec 87
Project No. 8910 L0212
Plant MERC
Sampler RLN
Sample No. 1072

Time	Comments
17:45	1 qt sample obtained

LIME SLURRY
METALS

Run No. 2

Date 10 DEC 87

Project No. 8910L0212

Plant MERC

Sampler RCN

Sample No. 2046

Time	Comments
15:55	1 Qt

LIME SLURRY
% Solids

Run No. 2
Date 10 DEC 87
Project No. 8910L0212
Plant MERC
Sampler RCN
Sample No. 2071

Time	Comments
15:55	$\frac{1}{2}$+

LIME SLURRY
Dioxins

Run No. Z
Date 10 DEC 87
Project No. 8910L0212
Plant MBRC
Sampler RCN
Sample No. 2072

Time	Comments
15:55	1 Qt

LIME SLURRY
Metals

Run No. 3
Date 12 Dec 87
Project No. 891060212

Plant MERC
Sampler RCN
Sample No. 3046

Time	Comments
14:45	1 qt

LIME SLURRY

% Solids

Run No. 3

Date 12 DEC 87

Project No. 8910L0212

Plant MERC

Sampler RLN

Sample No. 3071

Time	Comments
14:45	1 qt

LIME SLURRY
Dioxins

Run No. 3
Plant MERC
Date 12 DEC 87
Sampler RCN
Project No. 8910L0212
Sample No. 3072

Time	Comments
14:45	1 qt

APPENDIX F

CEM DATA

F.1 Summary Tables and Concentration Plots F-2
F.2 Run 1 - Spray Dryer Inlet F-36
Spray Dryer Outlet (Midpoint)
Baghouse Outlet
F.3 Run 2 - Spray Dryer Inlet F-91
Spray Dryer Outlet (Midpoint)
Baghouse Outlet
F.4 Run 3 - Spray Dryer Inlet F-163
Spray Dryer Outlet (Midpoint)
Baghouse Outlet
Table of Conversion Factors F-236

F.1 Summary Tables and Concentration Plots

CEM DATA SUMMARY--ACID GASES

		Average (ppm)	RSD[a] (%)
Run 1			
SO_2	Dryer inlet	83.2	16.1
	Baghouse outlet	28.4	43.3
	Removal efficiency	66.0	-
HCl	Dryer inlet	478	NA[d]
	Dryer outlet	63	NA
	Baghouse outlet	9	NA
	Removal efficiency	98.2	-
NO_x	Baghouse outlet	203	8.72
Run 2[b]			
SO_2	Dryer inlet	76.9	11.3
	Baghouse outlet	21.2	45.6
	Removal efficiency	72.3	-
HCl	Dryer inlet	566	NA
	Dryer outlet	8	NA
	Baghouse outlet	4	NA
	Removal efficiency	99.3	-
NO_x	Baghouse outlet	206	8.25
Run 3			
SO_2	Dryer inlet	115	20.3
	Baghouse outlet	12.0	18.6
	Removal efficiency	89.6	-
HCl	Dryer inlet	540	NA
	Dryer outlet[c]	1	NA
	Baghouse outlet	3	NA
	Removal efficiency	99.4	-
NO_x	Baghouse outlet	210	8.76
Average of 3 runs			
SO_2	Dryer inlet	91.8	-
	Baghouse outlet	20.5	-
	Removal efficiency	76.0	-
HCl	Dryer inlet	528	-
	Dryer outlet	24	-
	Baghouse outlet	5	-
	Removal efficiency	99	-
NO_x	Baghouse outlet	206	-

[a] RSD (relative standard deviation) = (100 x standard deviation) ÷ mean.

[b] Spray dryer lime slurry flow rate was increased by 100% at about 13:45 during run 2.

[c] HCl results at the dryer outlet are questionable for run 3.

[d] NA = Data is not available for HCl, which is contained in a separate report by Entropy Environmentalists Inc.

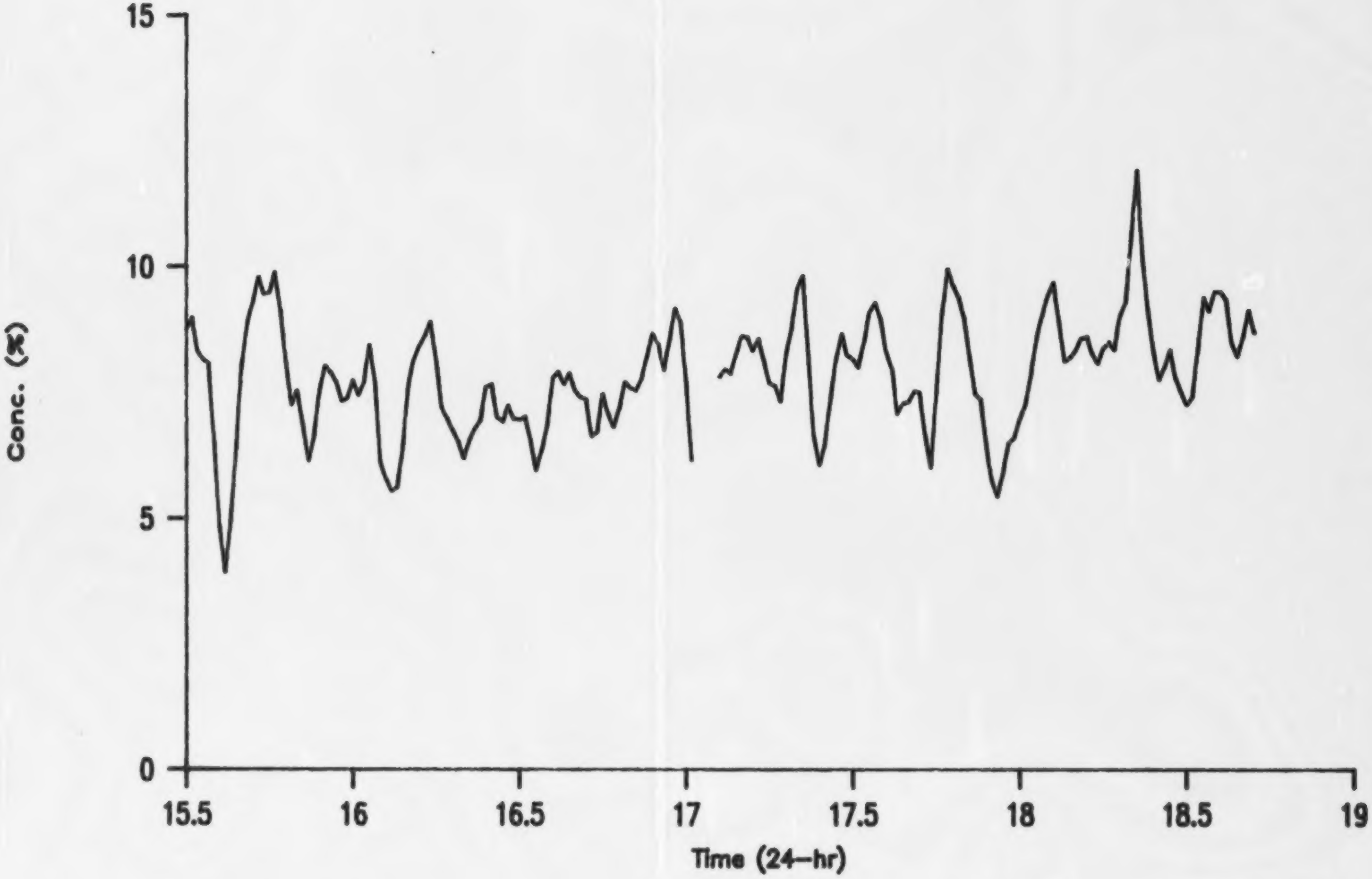
CEM DATA SUMMARY--OTHER GASES

		Average	RSD[a] (%)
Run 1			
O_2, %	Dryer inlet	7.9	14.8
	Dryer outlet	7.4	14.9
	Baghouse outlet	8.0	14.3
CO_2, %	Dryer inlet	11.6	8.45
	Dryer outlet	11.5	6.78
	Baghouse outlet	11.6	8.71
CO, ppm	Dryer inlet	62.8	36.1
Run 2[b]			
O_2, %	Dryer inlet	8.5	10.6
	Dryer outlet	7.9	13.7
	Baghouse outlet	8.4	12.4
CO_2, %	Dryer inlet	11.2	7.29
	Dryer outlet	11.7	2.82
	Baghouse outlet	11.1	8.47
CO, ppm	Dryer inlet	68.5	17.3
Run 3			
O_2, %	Dryer inlet	8.4	13.3
	Dryer outlet	7.8	15.5
	Baghouse outlet	8.6	15.4
CO_2, %	Dryer inlet	11.2	12.0
	Dryer outlet	11.7	3.42
	Baghouse outlet	11.3	10.8
CO, ppm	Dryer inlet	89.9	55.9
THC[a], ppm	Dryer inlet	1.14	86.0

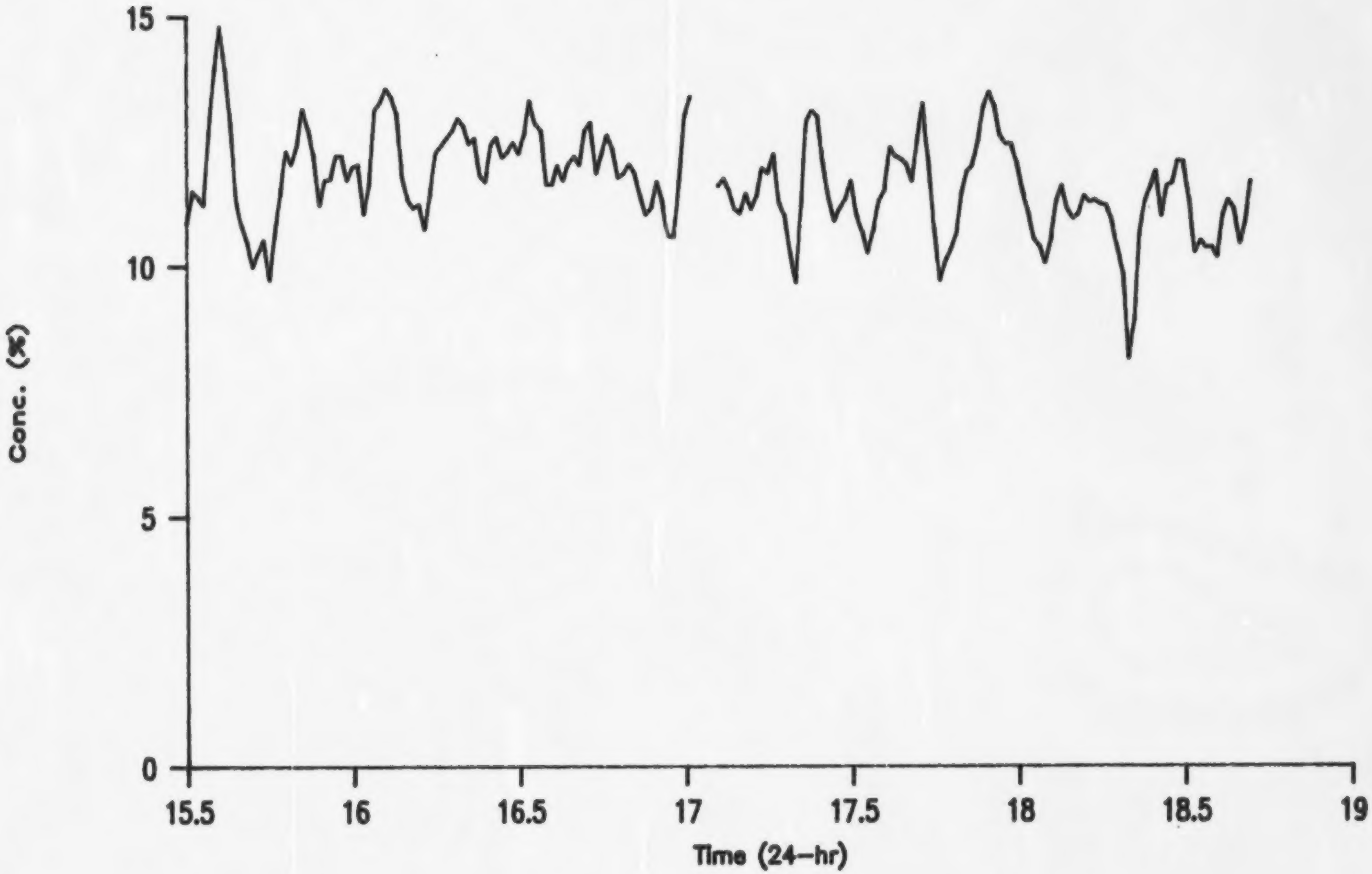
[a] RSD (relative standard deviation) = (100 x standard deviation) ÷ mean.

[b] The total hydrocarbon analyzer was not functioning properly for runs 1 and 2 and had span drift during run 3.

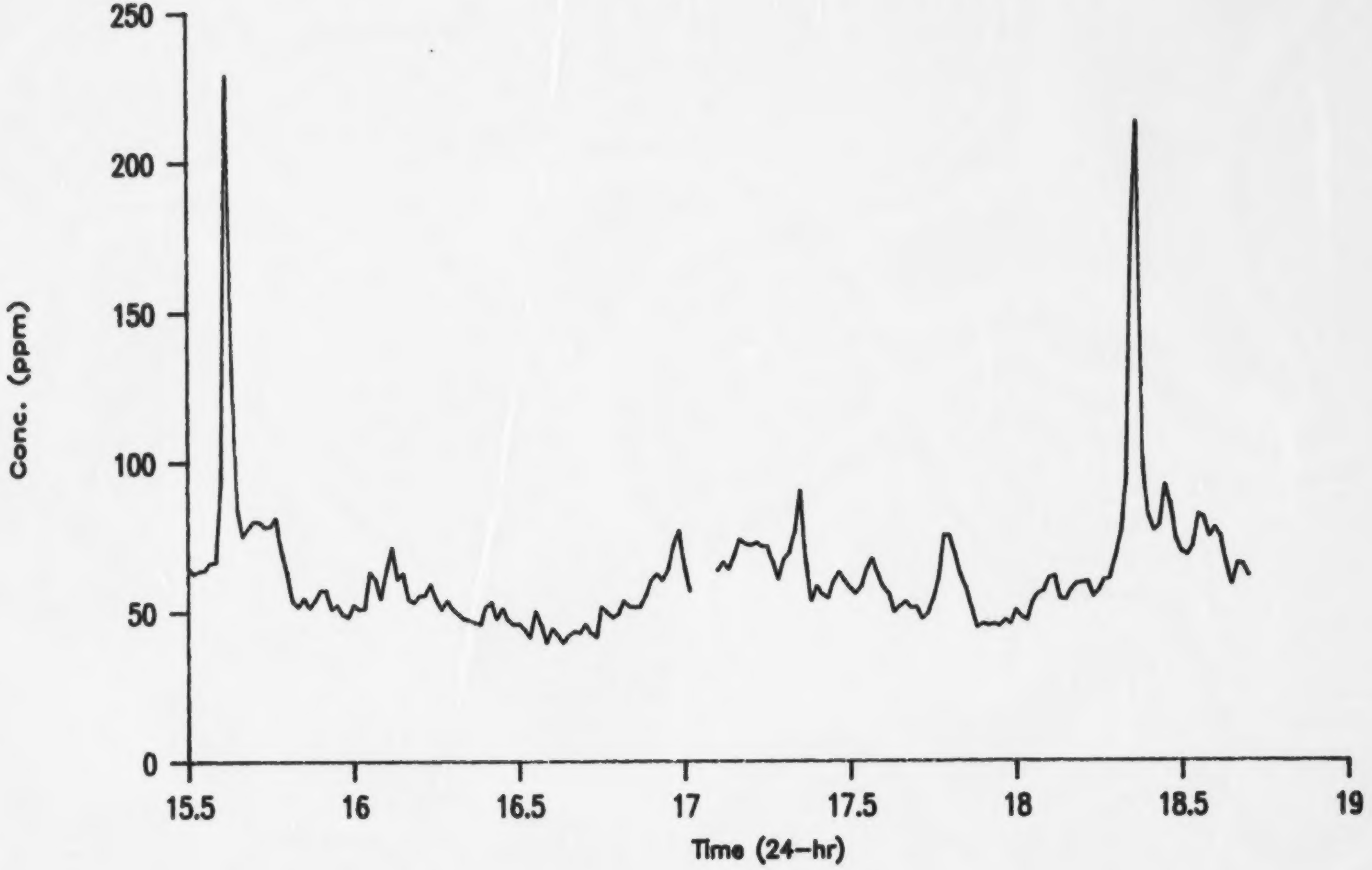
RUN #1 INLET OXYGEN



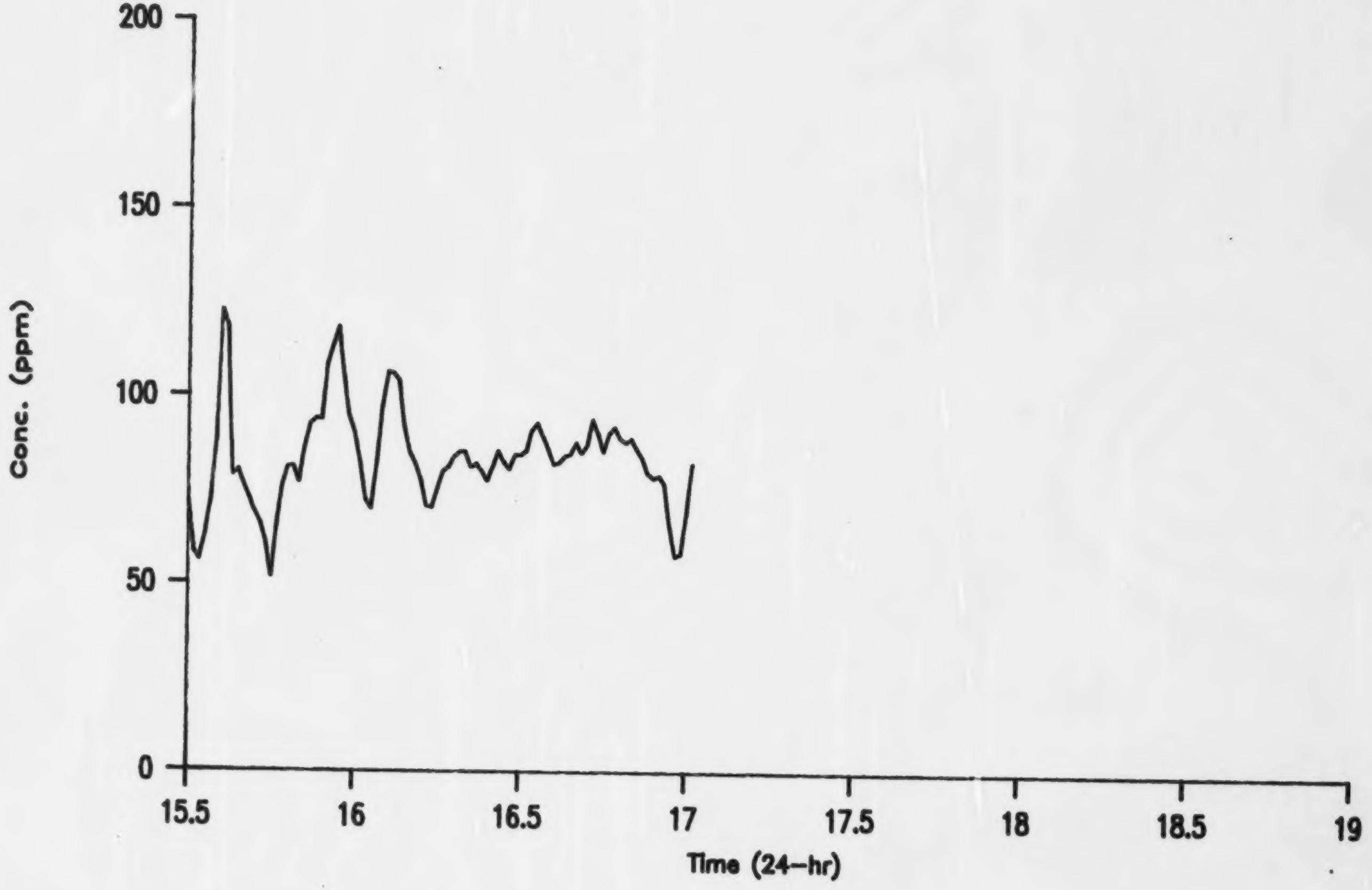
RUN #1 INLET CO2



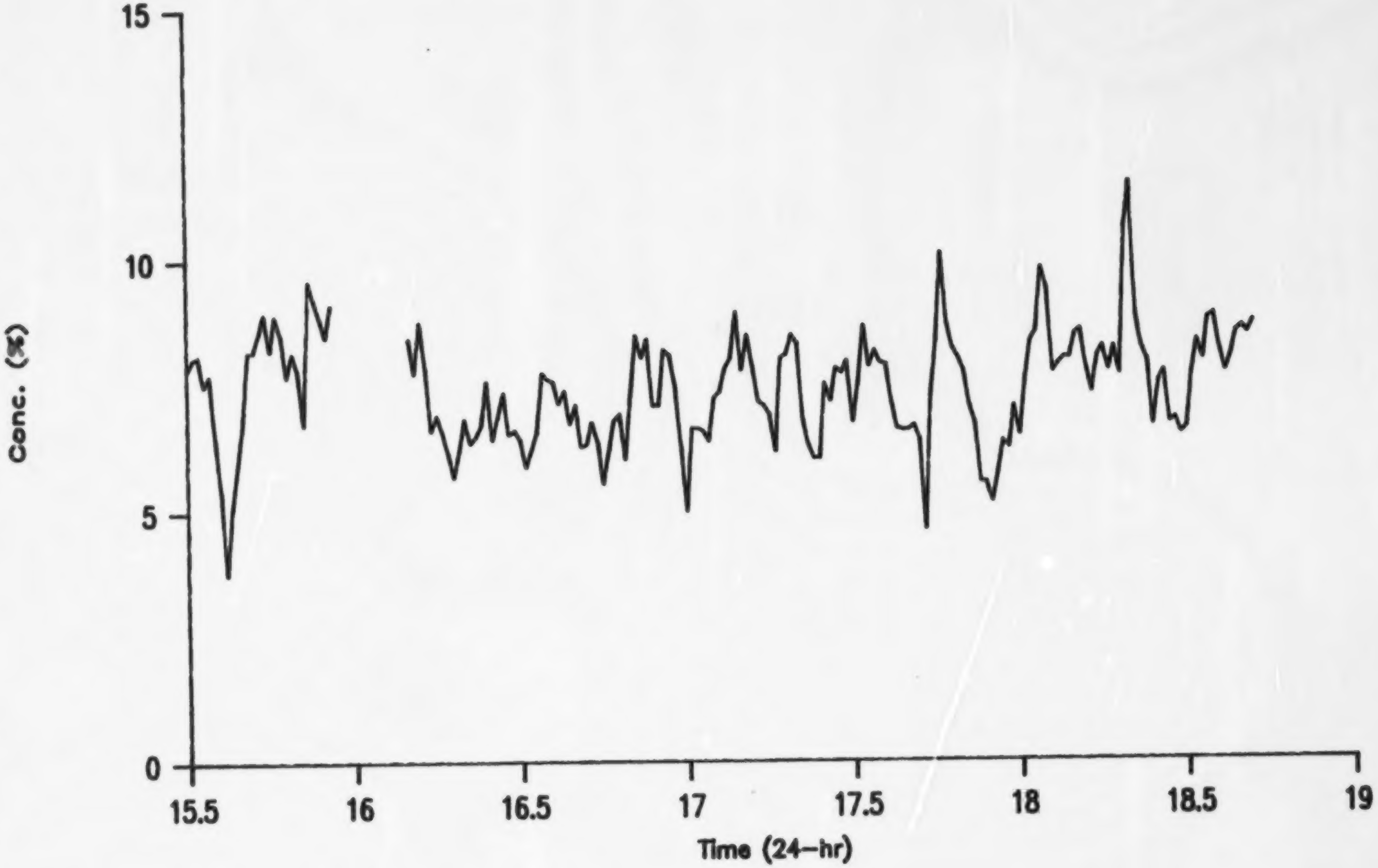
RUN #1 INLET CO



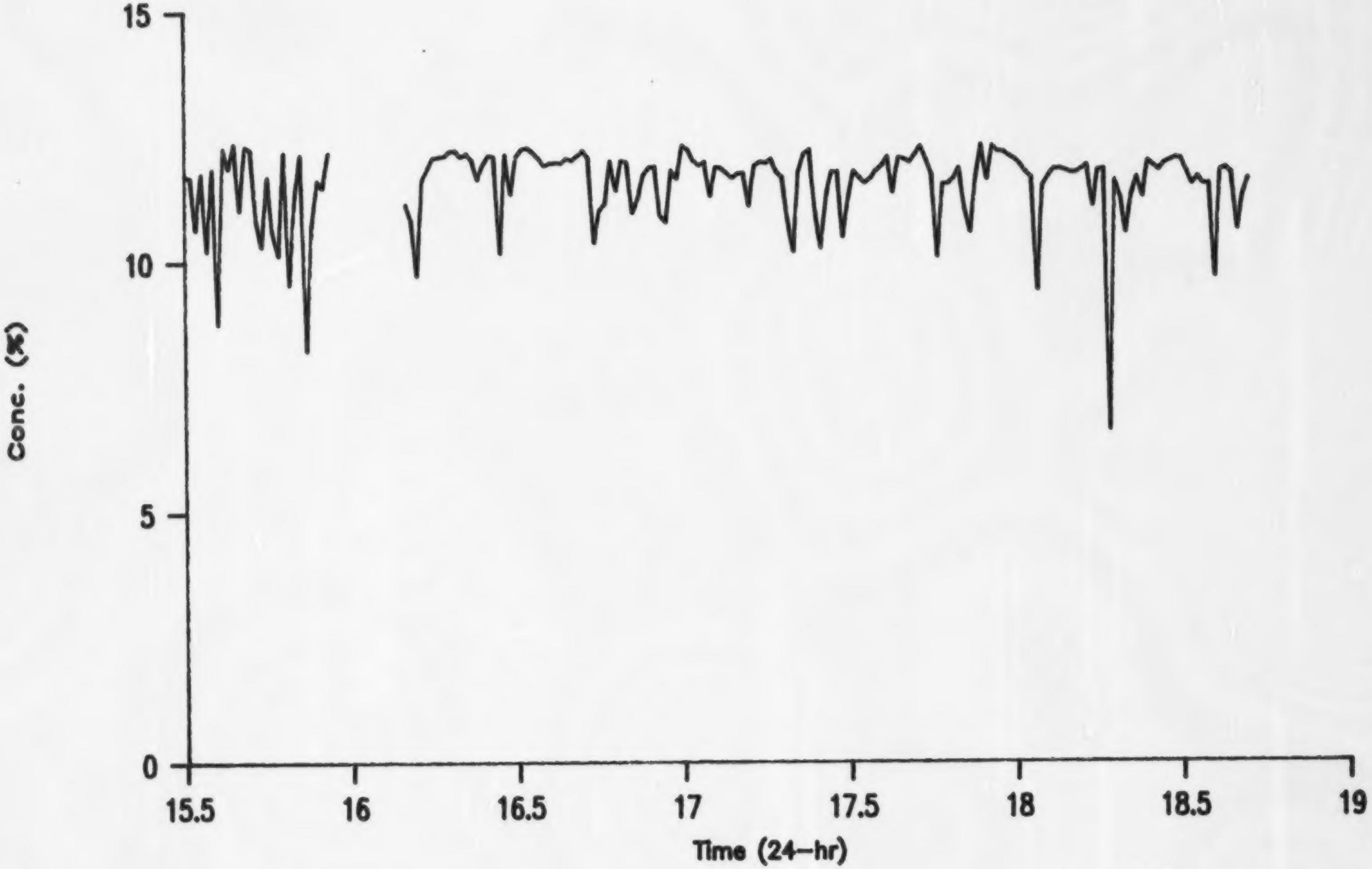
RUN #1 INLET SO2



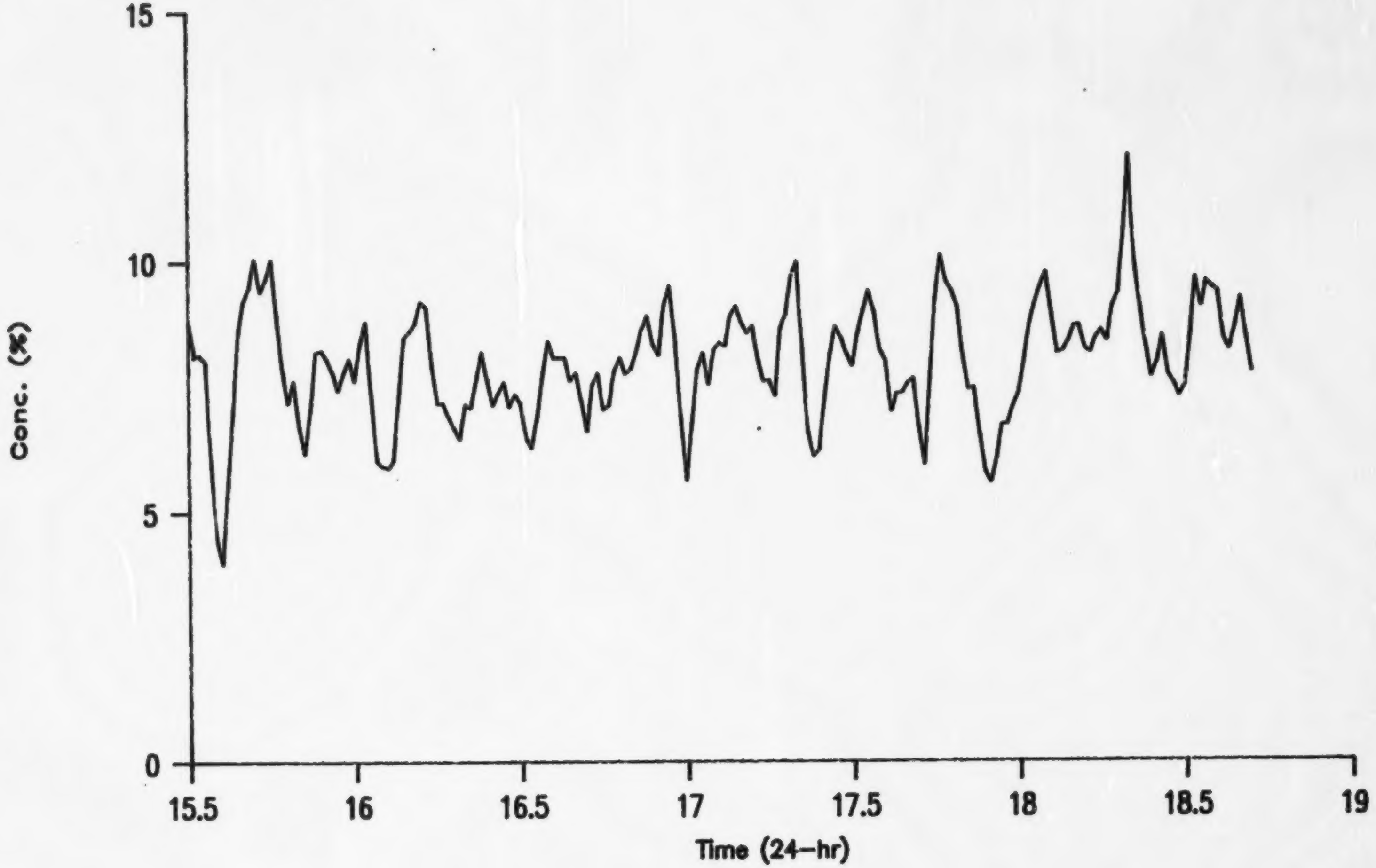
RUN #1 MIDPOINT OXYGEN



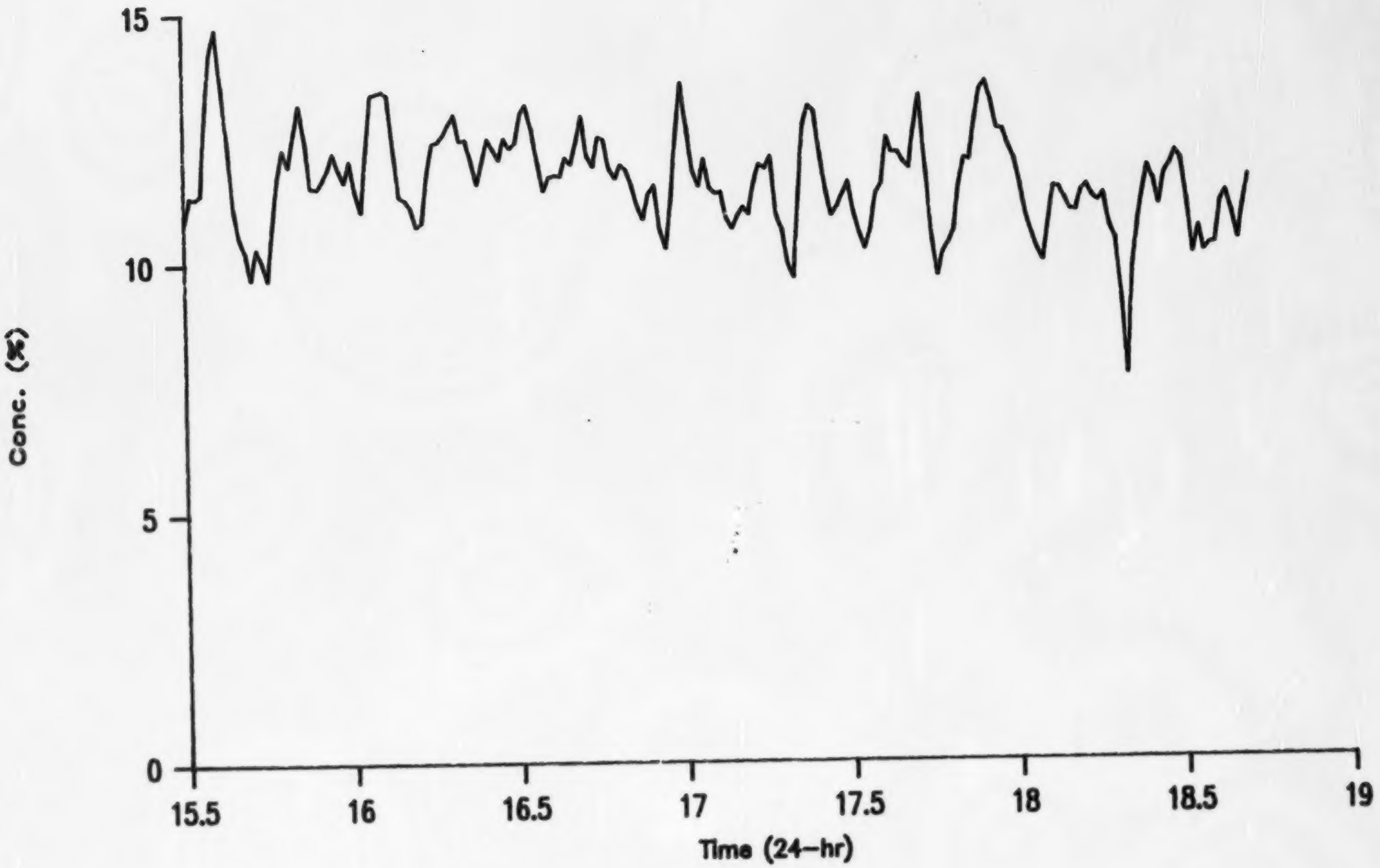
RUN #1 MIDPOINT CO2



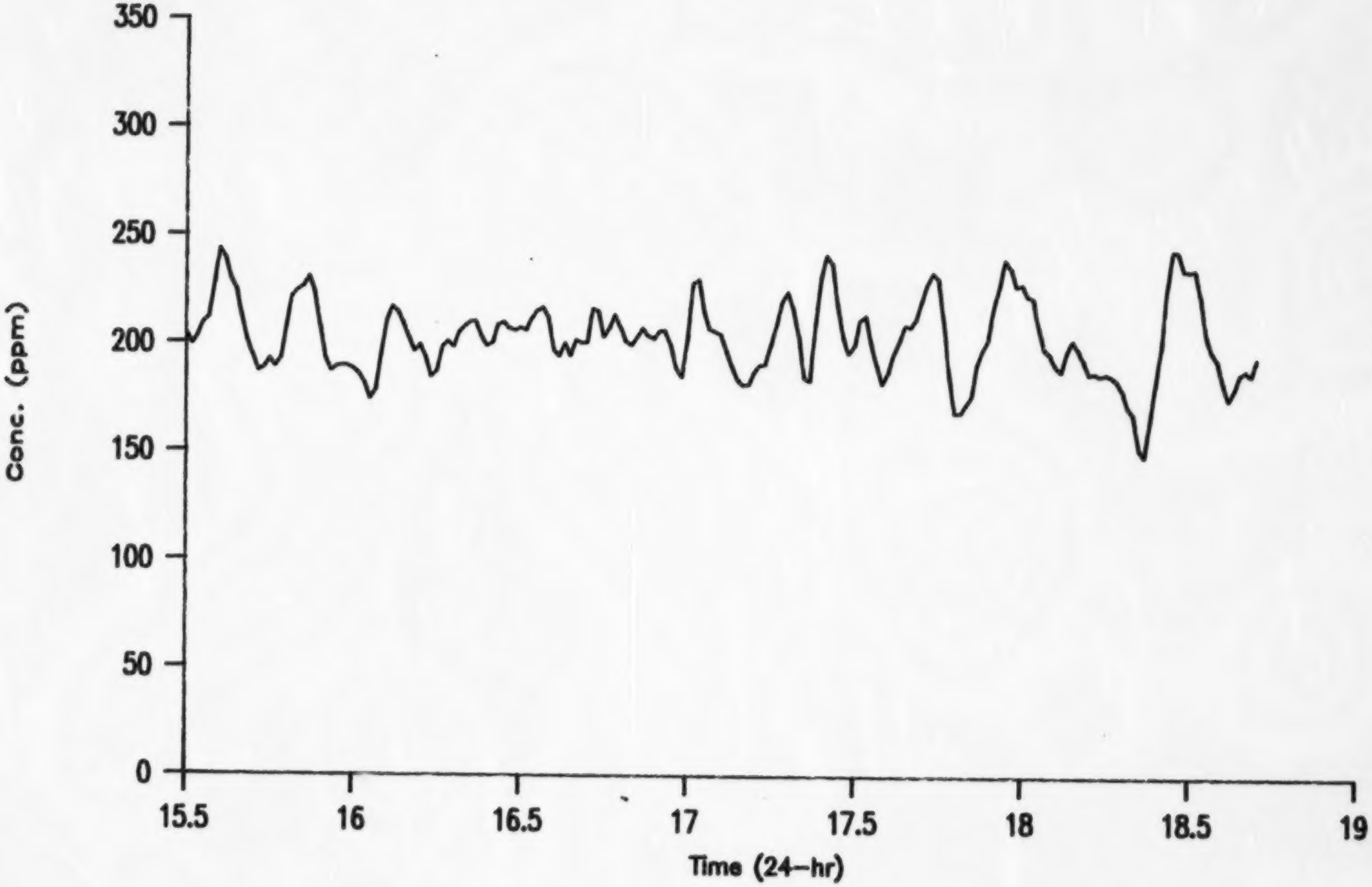
RUN #1 OUTLET OXYGEN



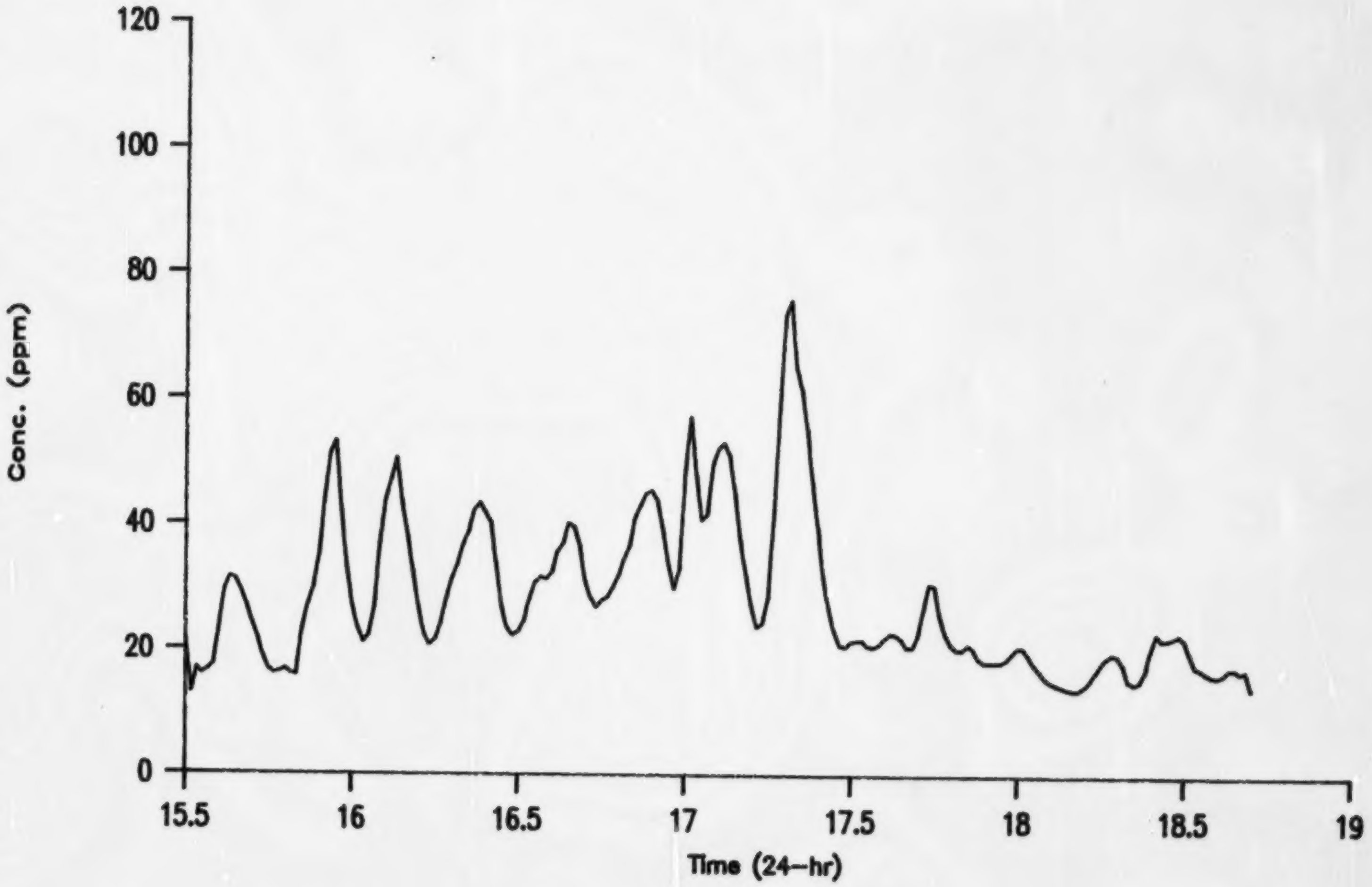
RUN #1 OUTLET CO2



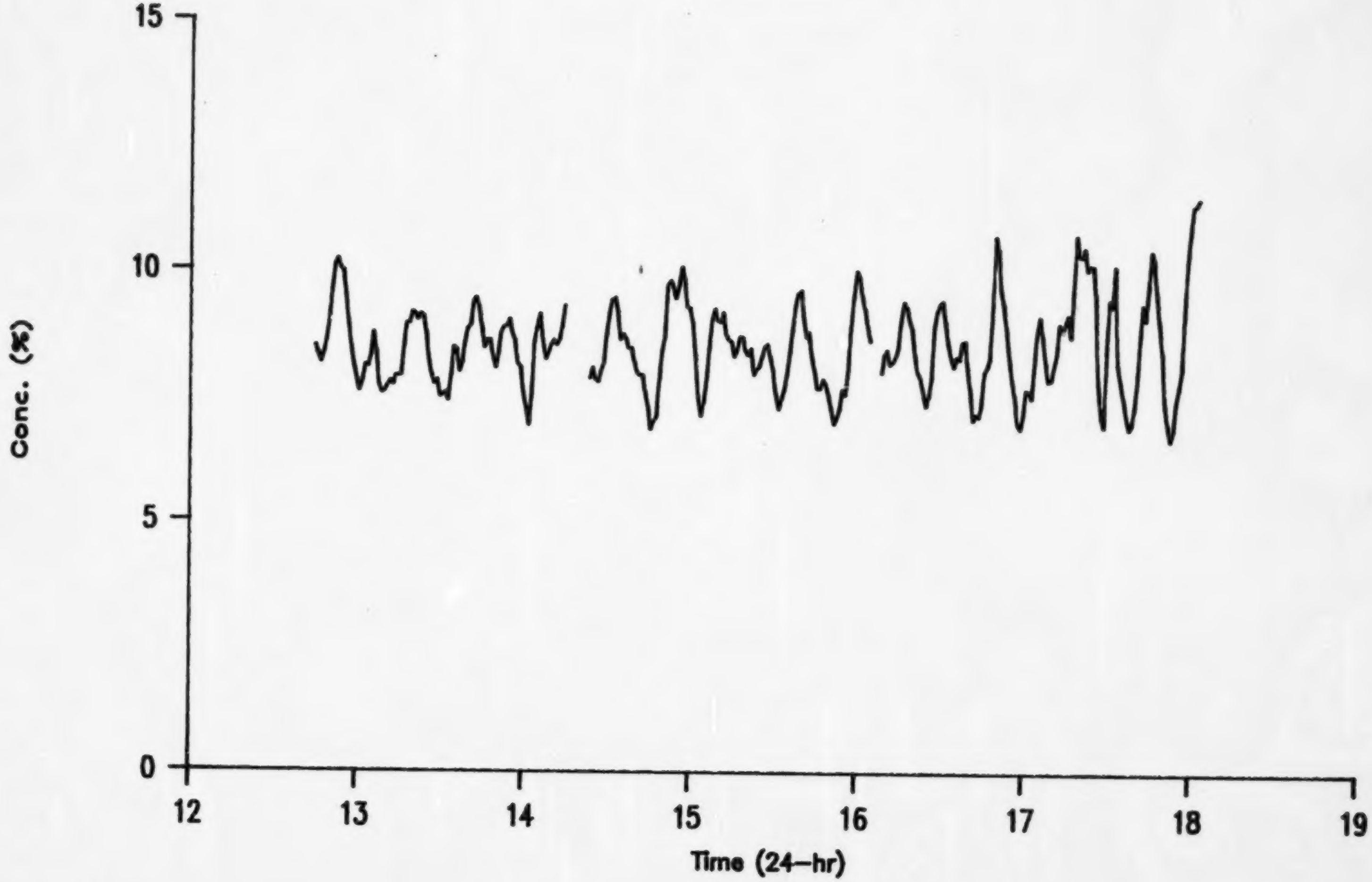
RUN #1 OUTLET NOx



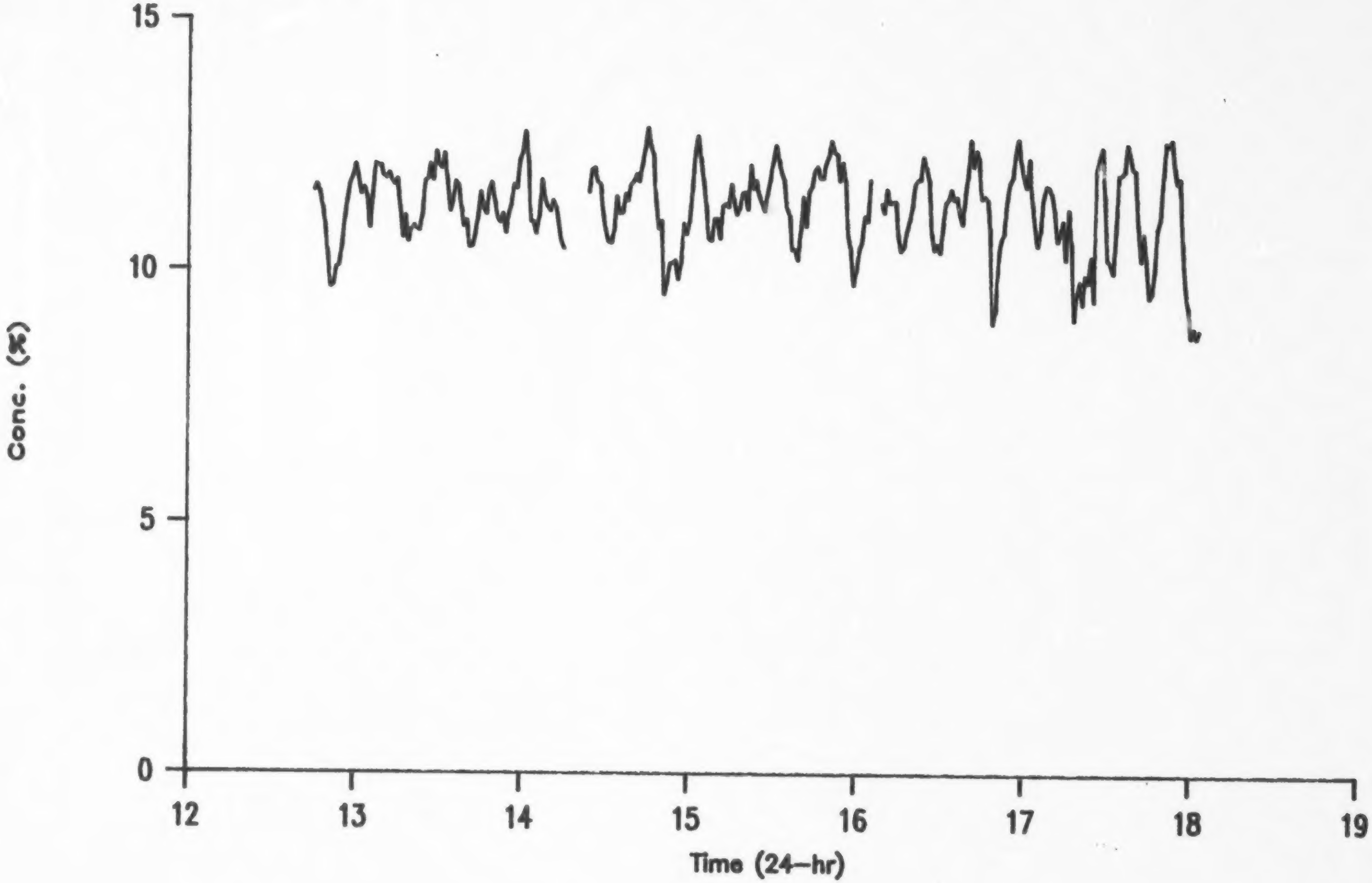
RUN #1 OUTLET SO2



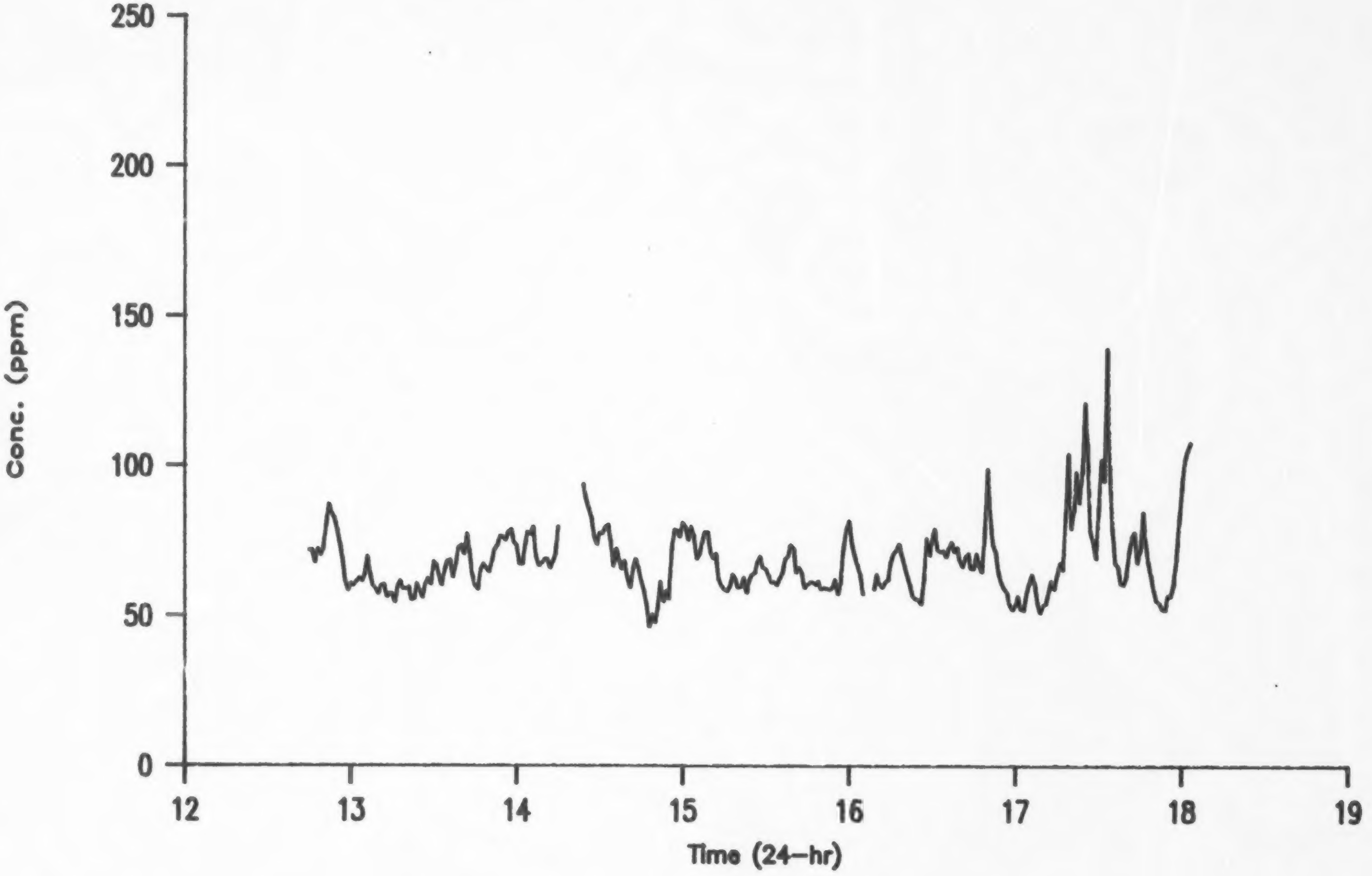
RUN #2 INLET OXYGEN



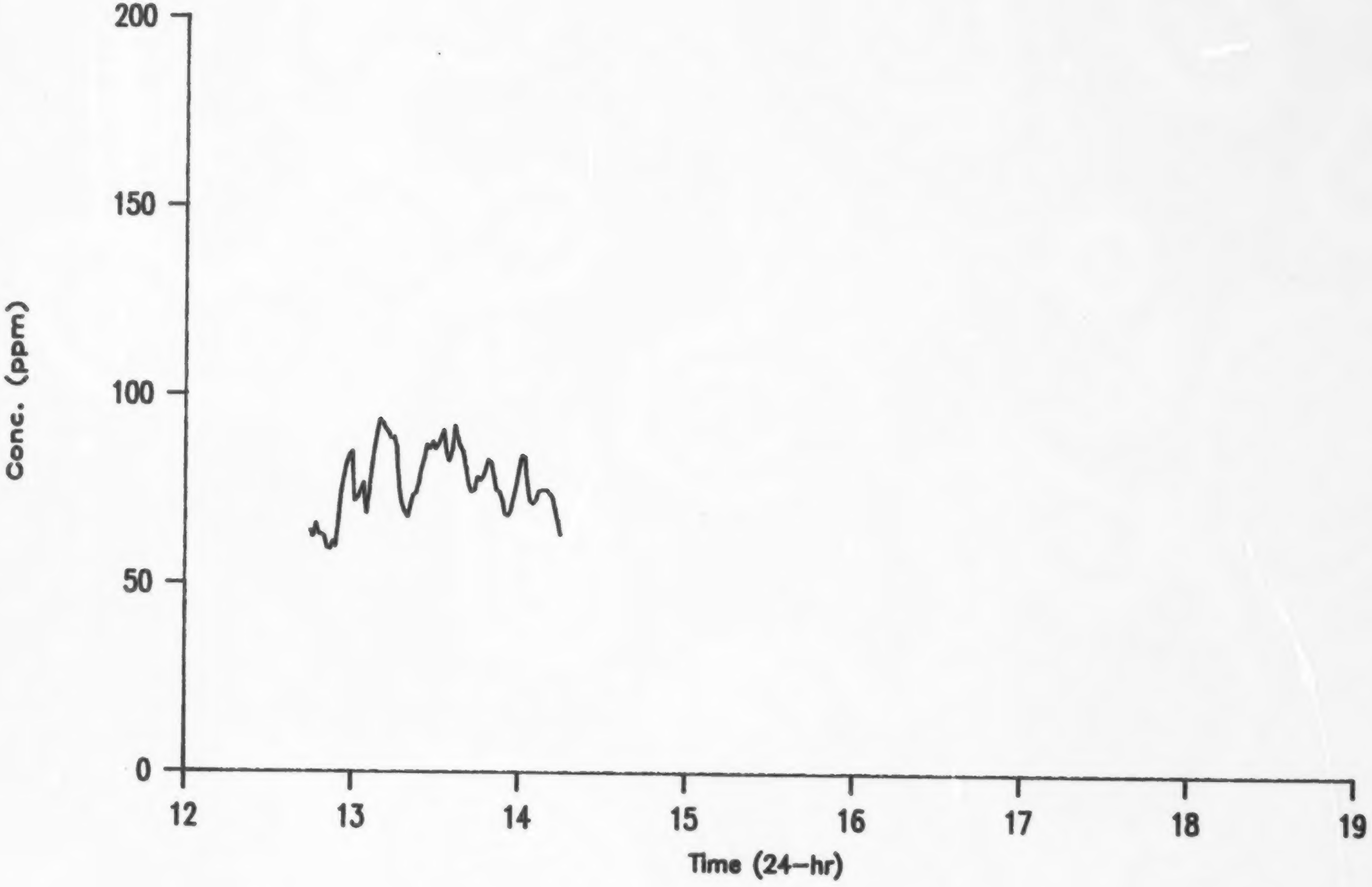
RUN #2 INLET CO2



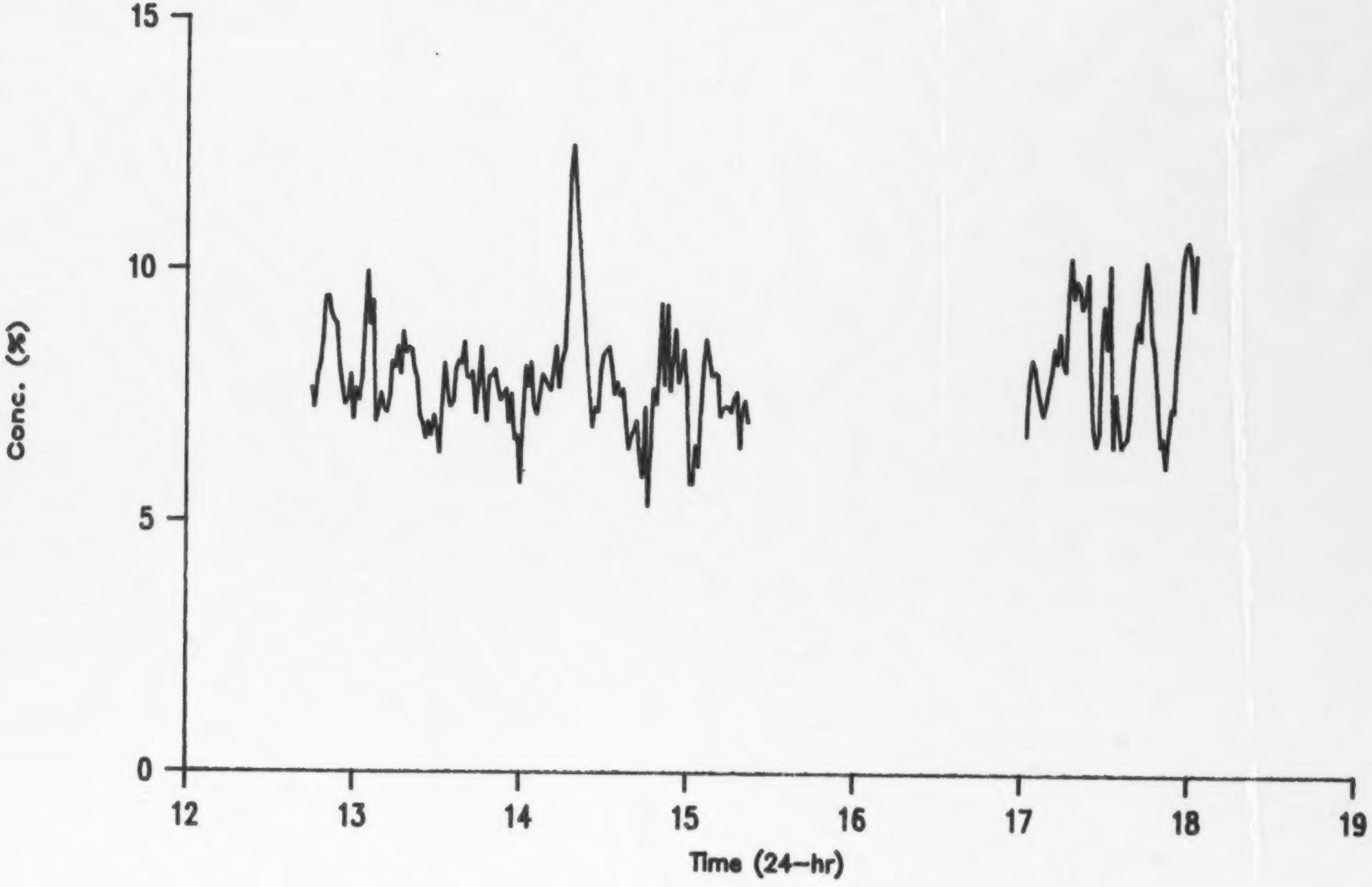
RUN #2 INLET CO



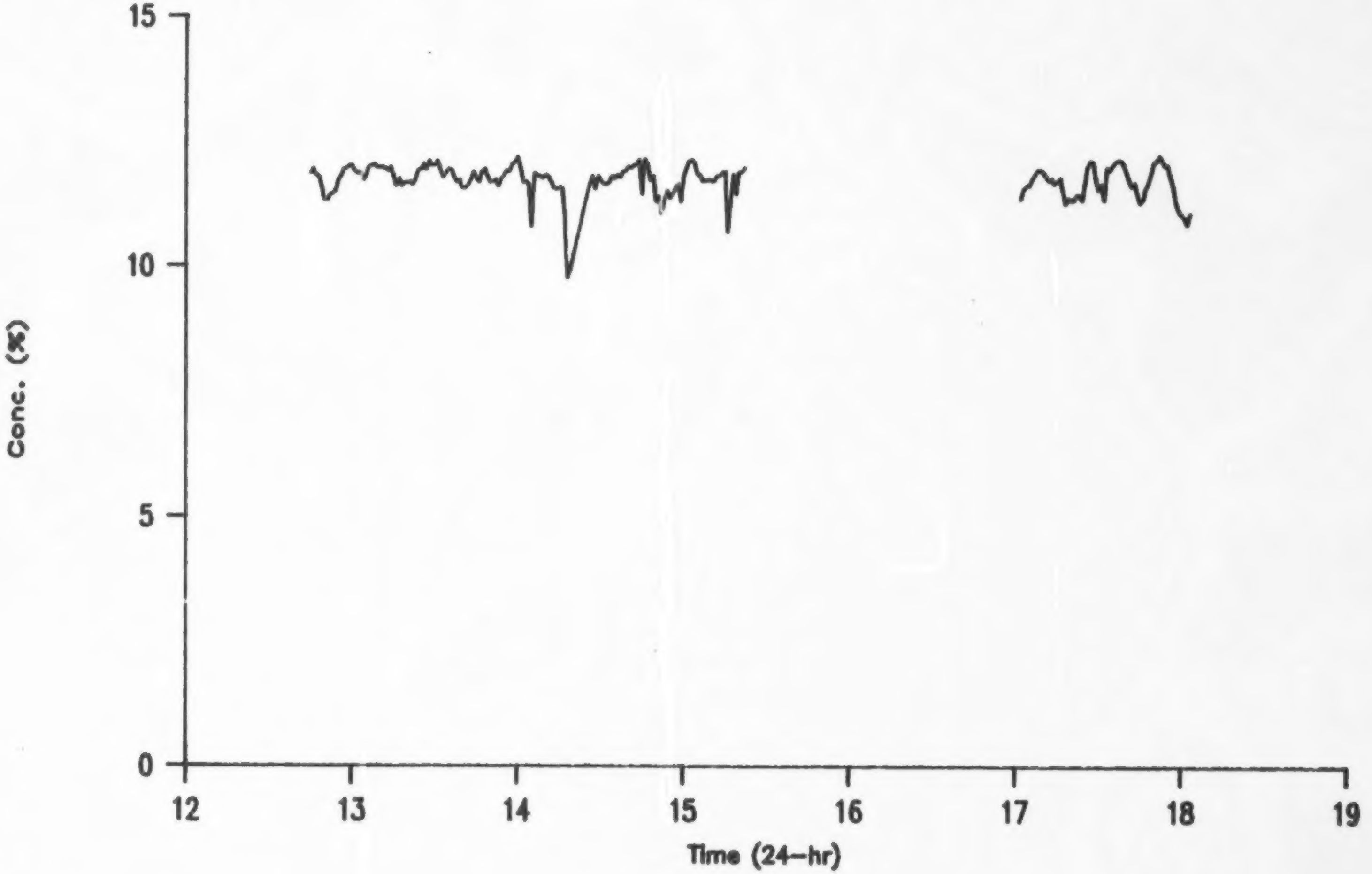
RUN #2 INLET SO2



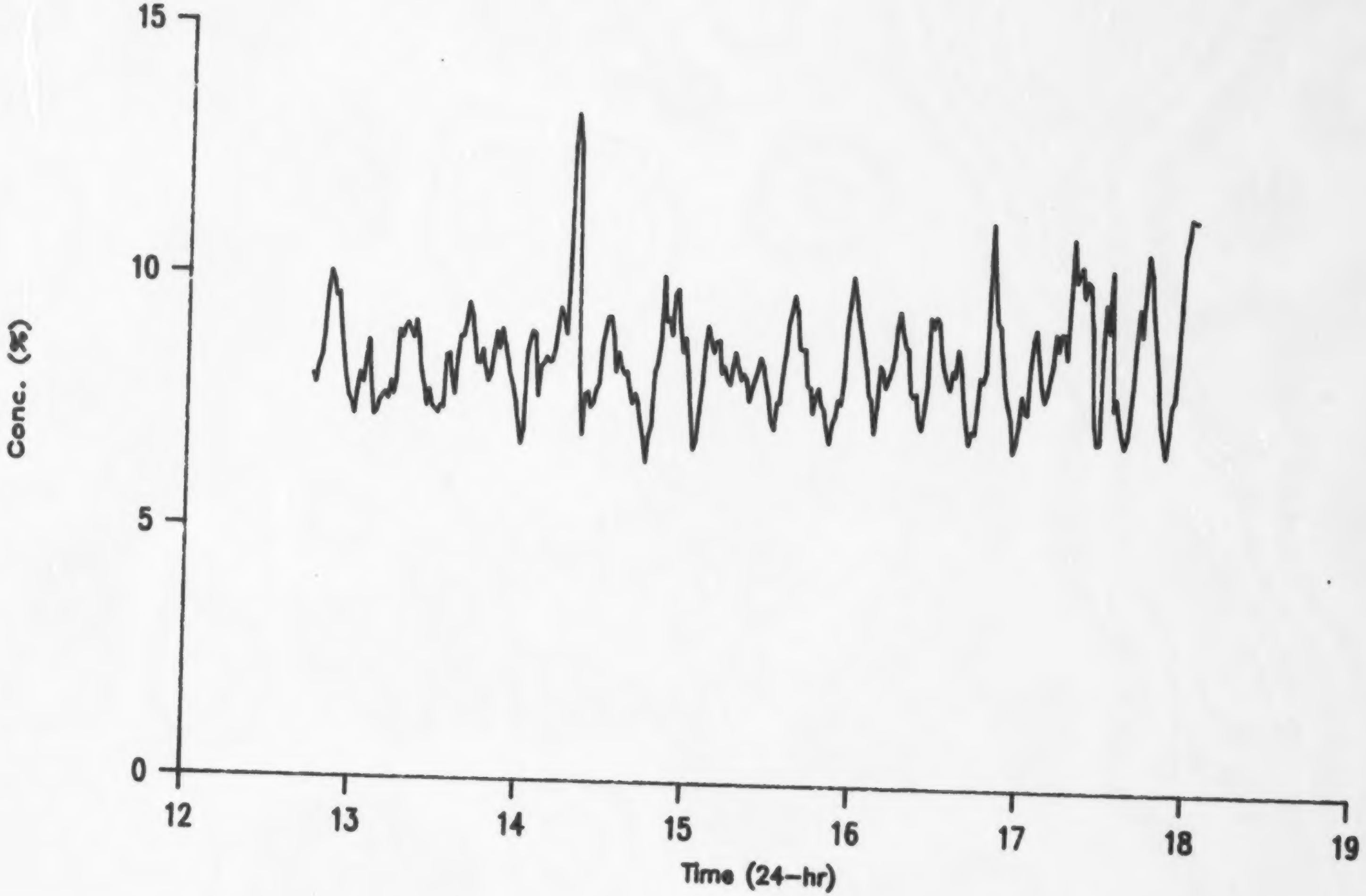
RUN #2 MIDPOINT OXYGEN



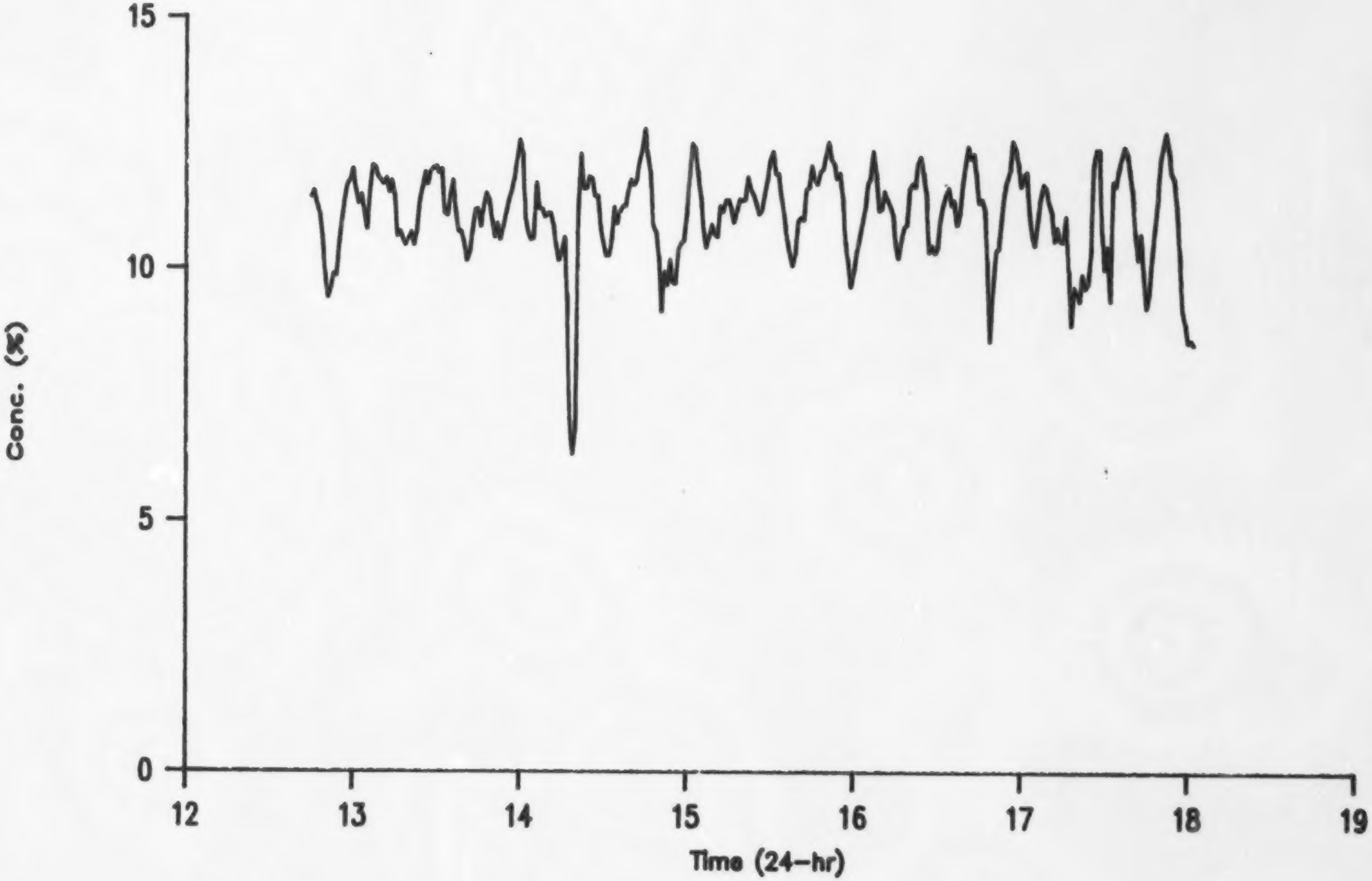
RUN #2 MIDPOINT CO2



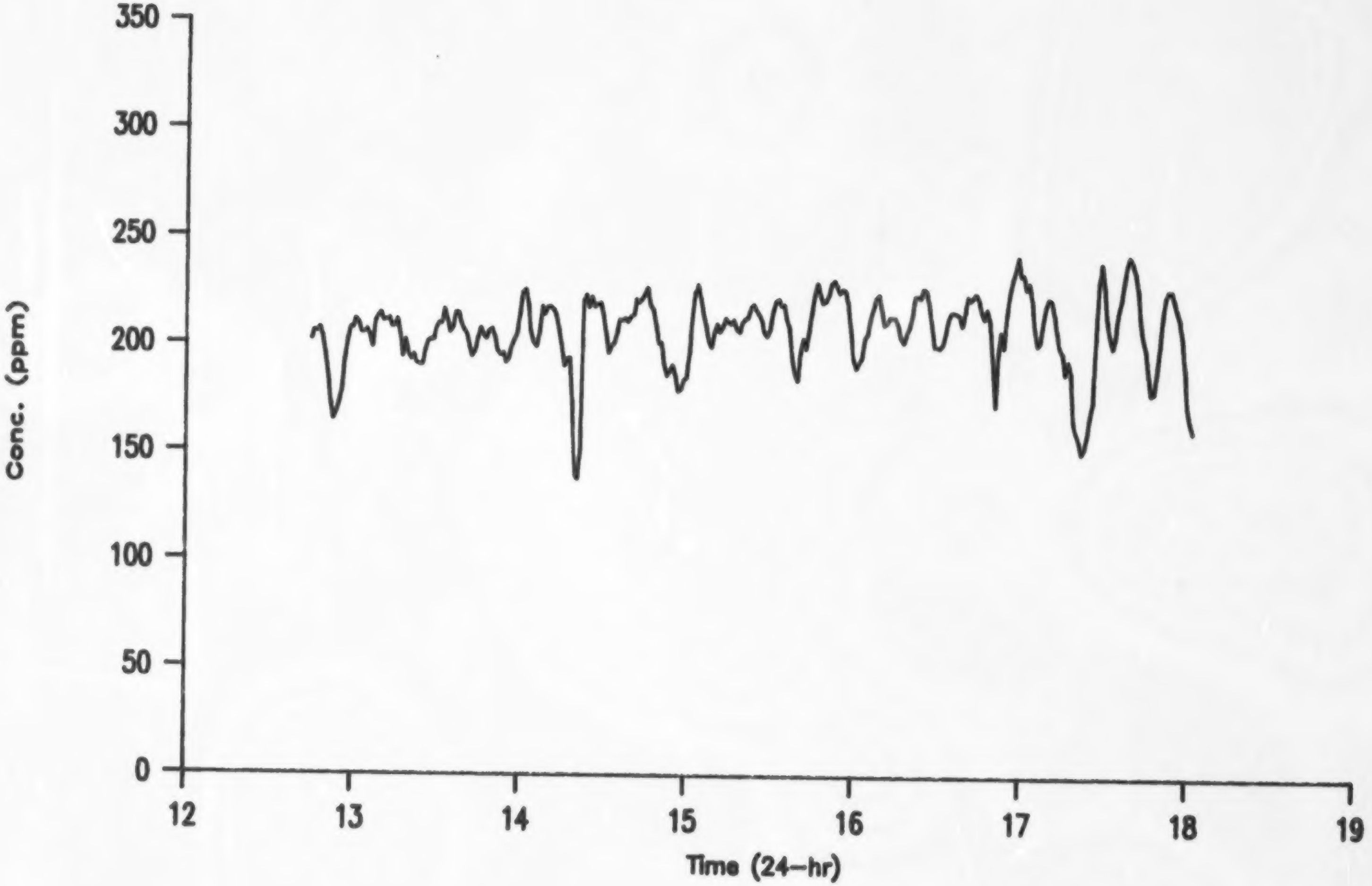
RUN #2 OUTLET OXYGEN



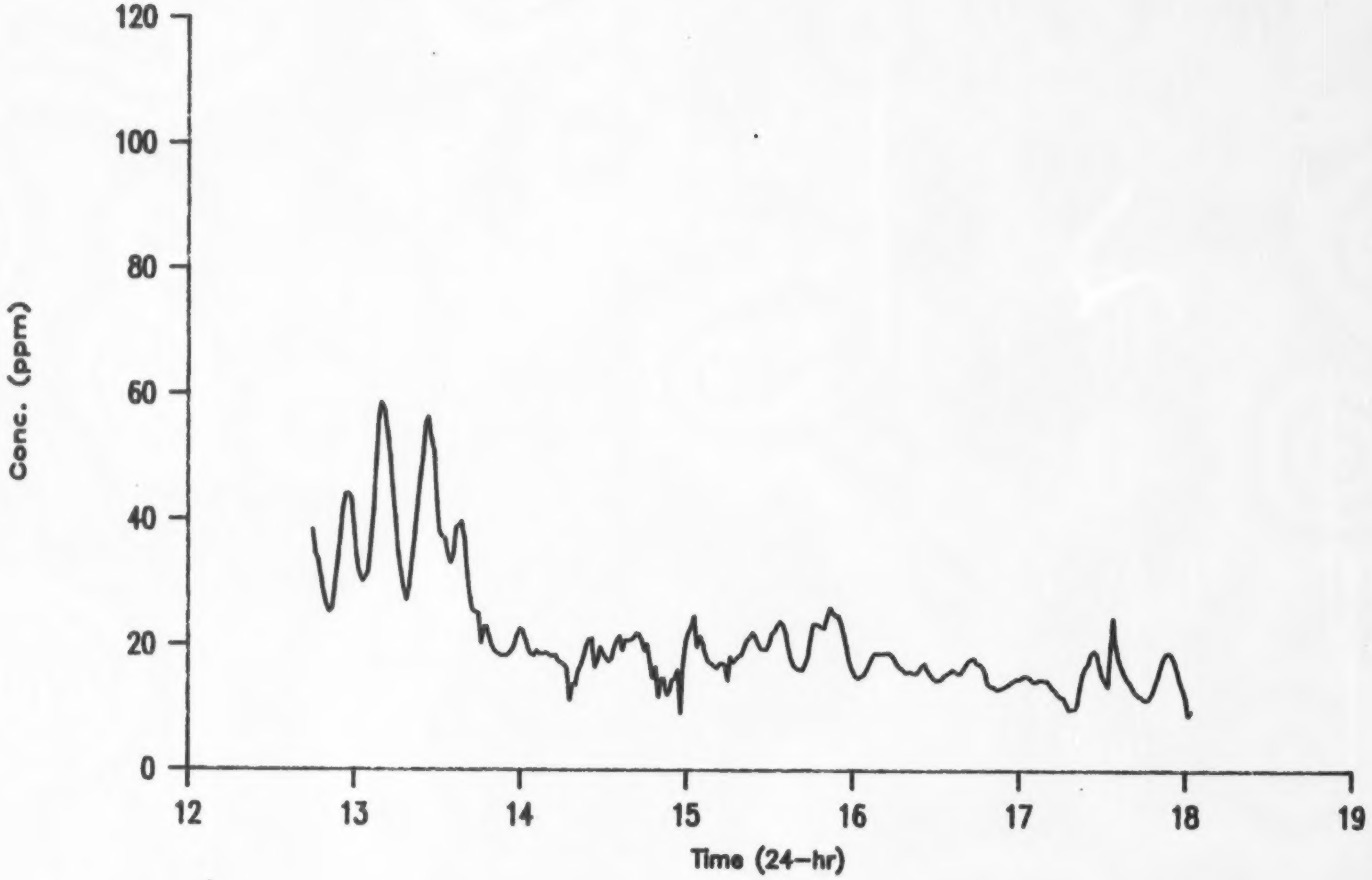
RUN #2 OUTLET CO2



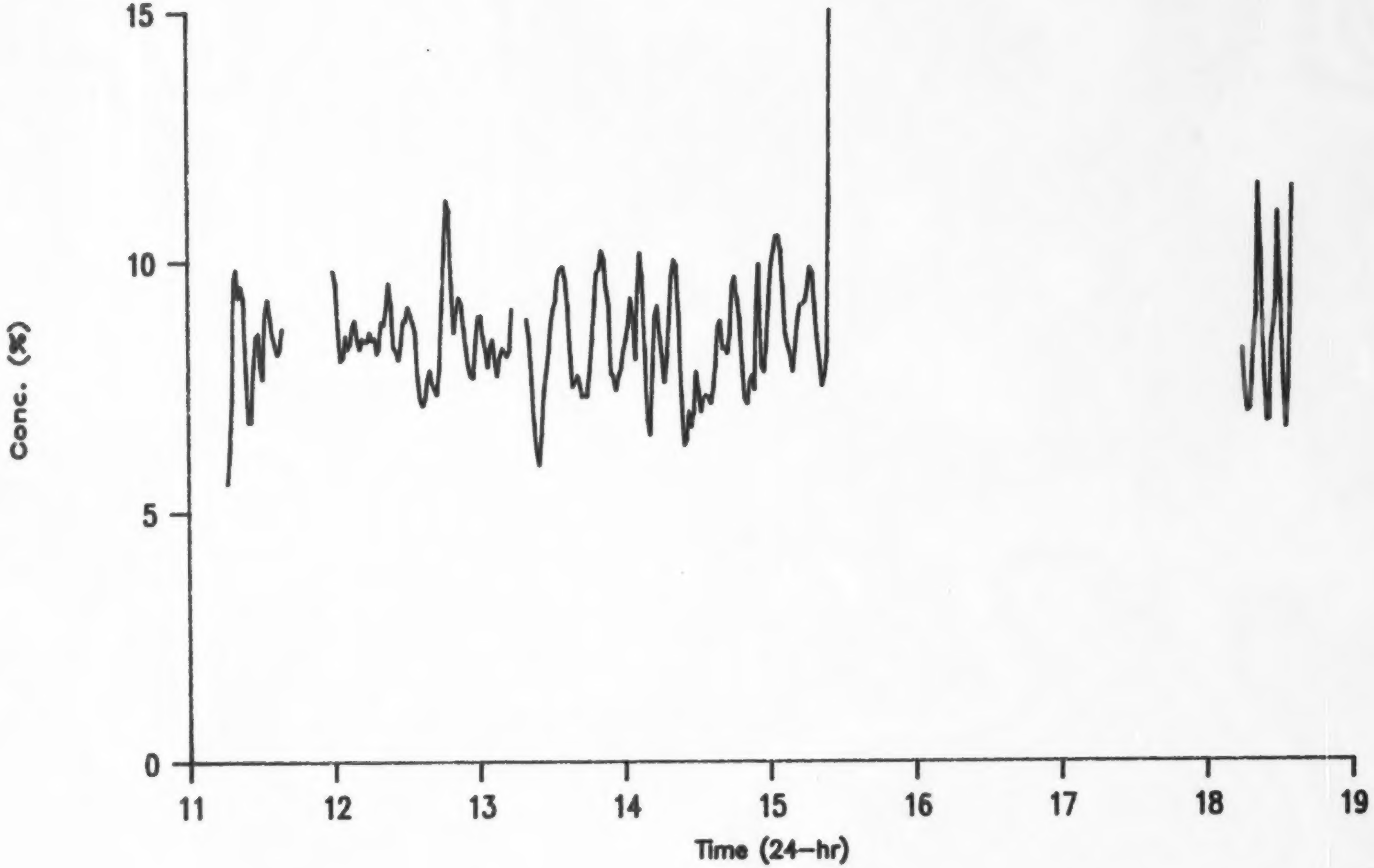
RUN #2 OUTLET NOx



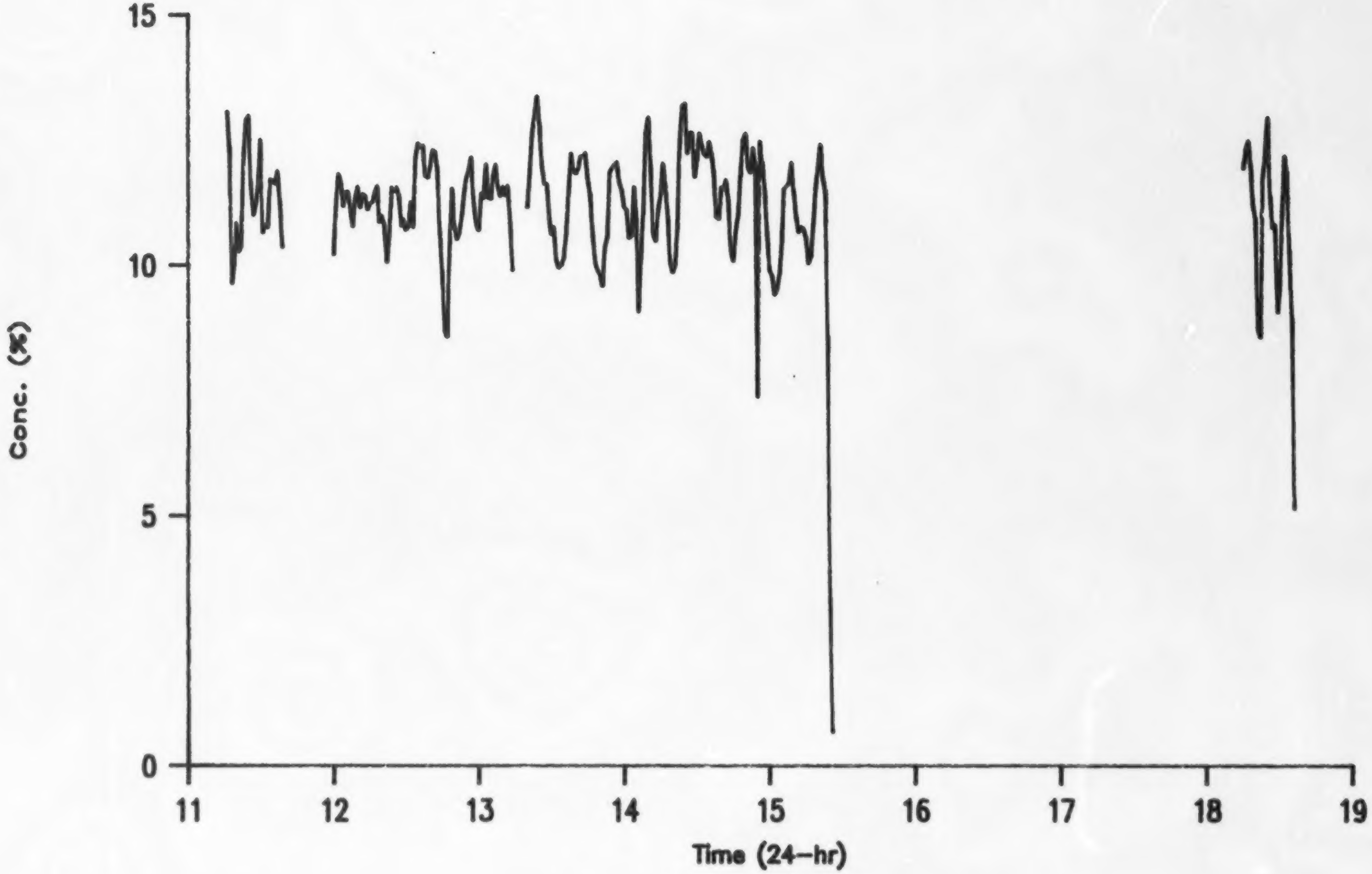
RUN #2 OUTLET SO2



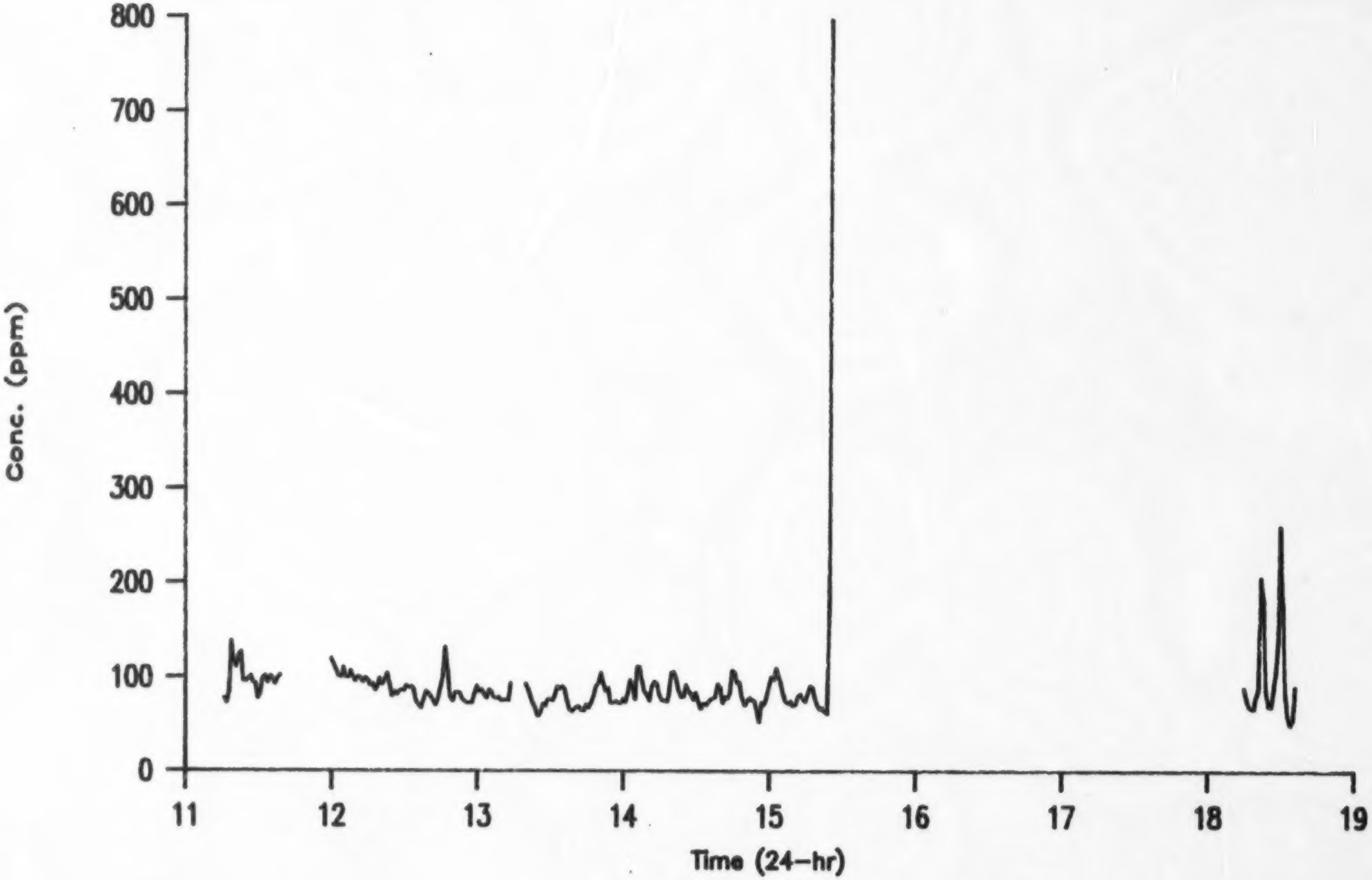
RUN #3 INLET OXYGEN



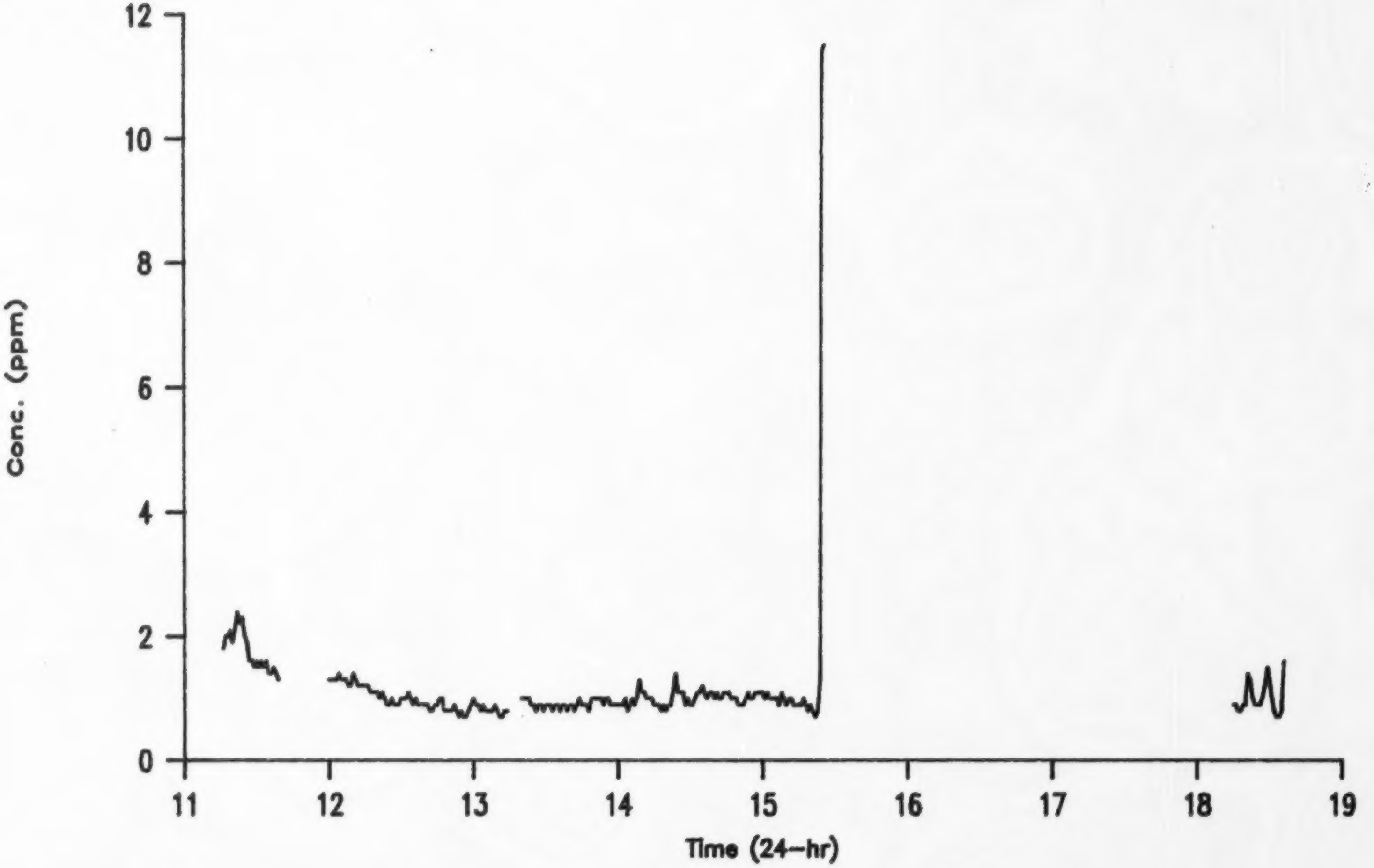
RUN #3 INLET CO2



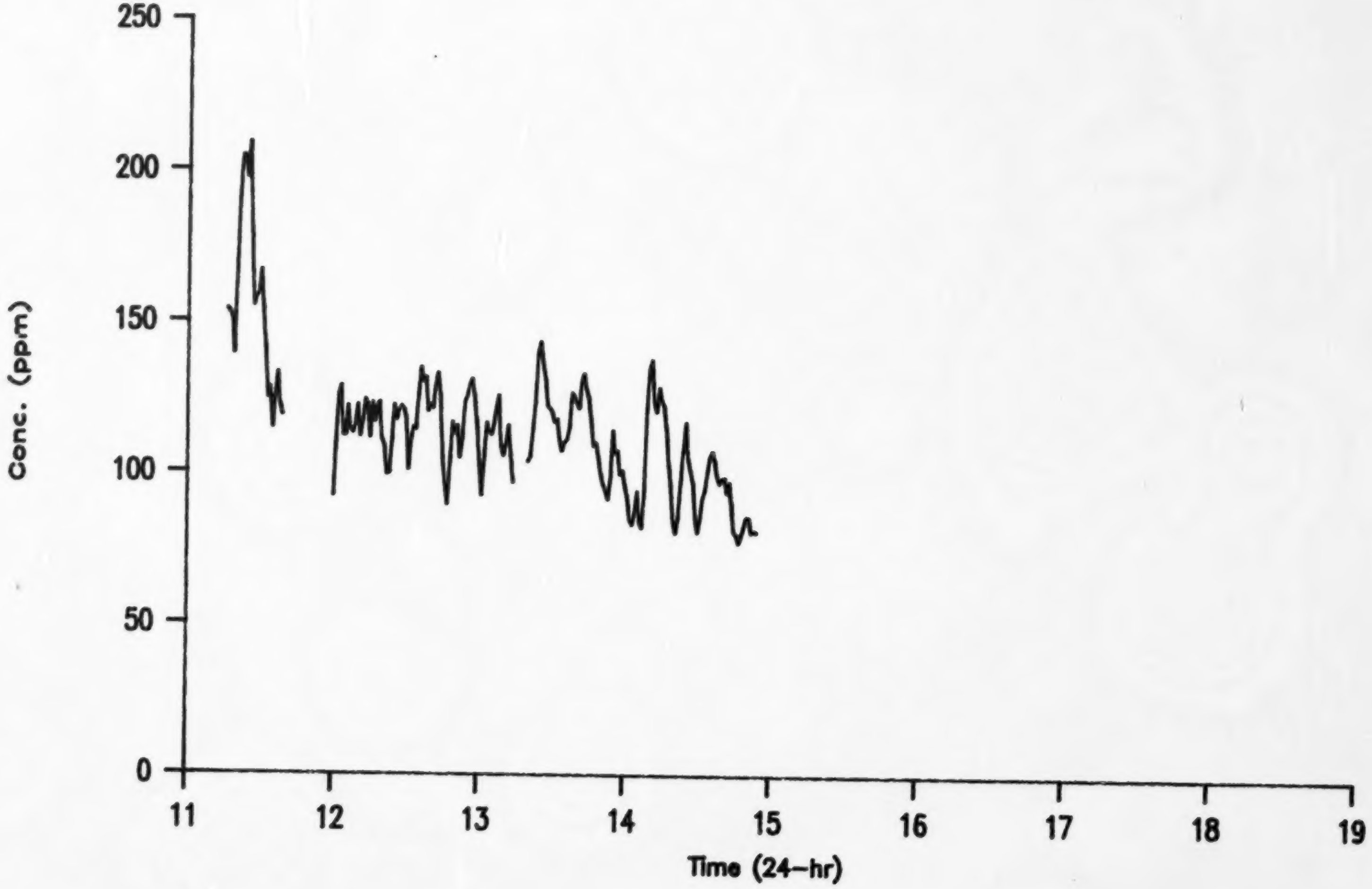
RUN #3 INLET CO



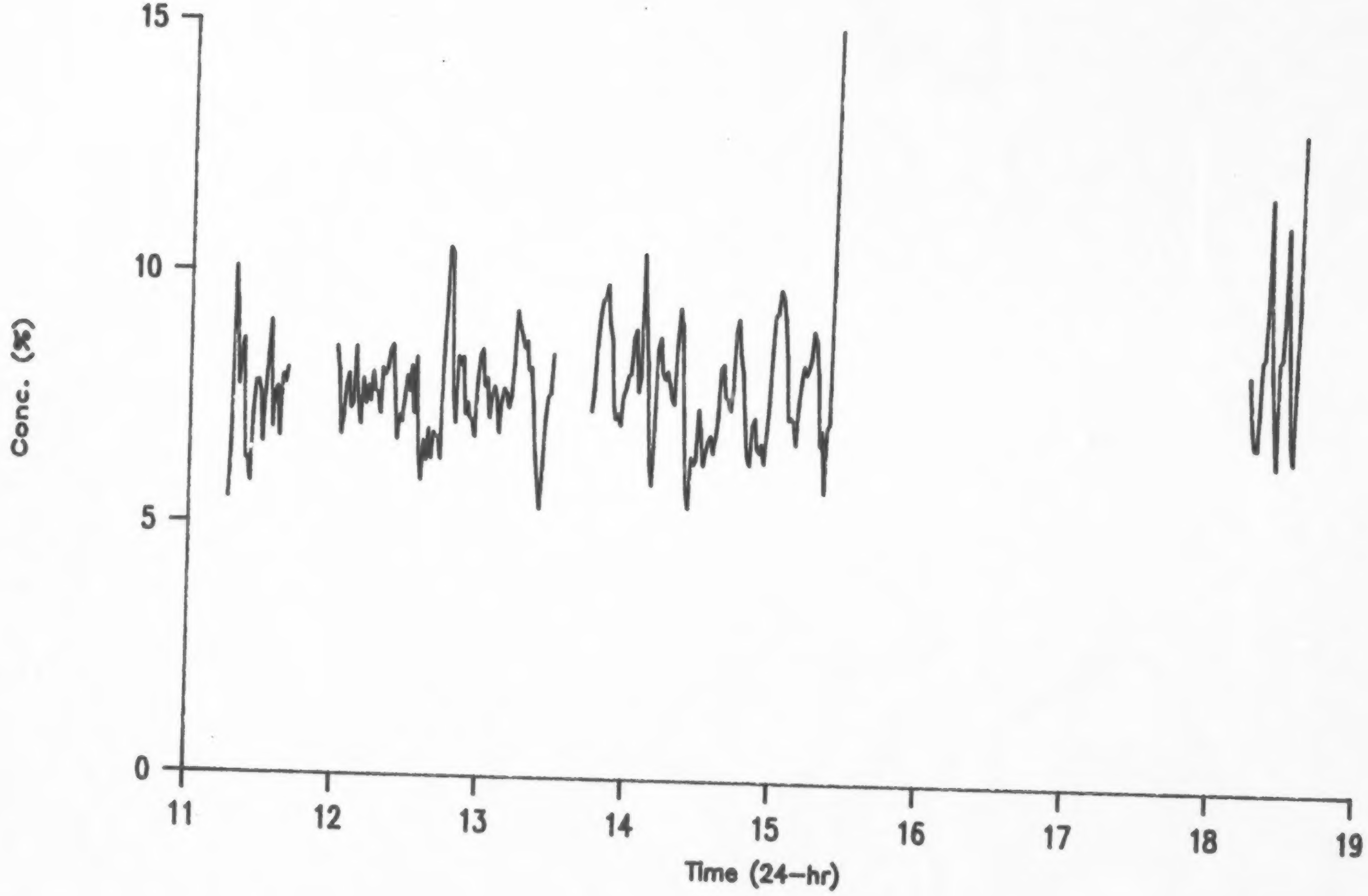
RUN #3 INLET THC



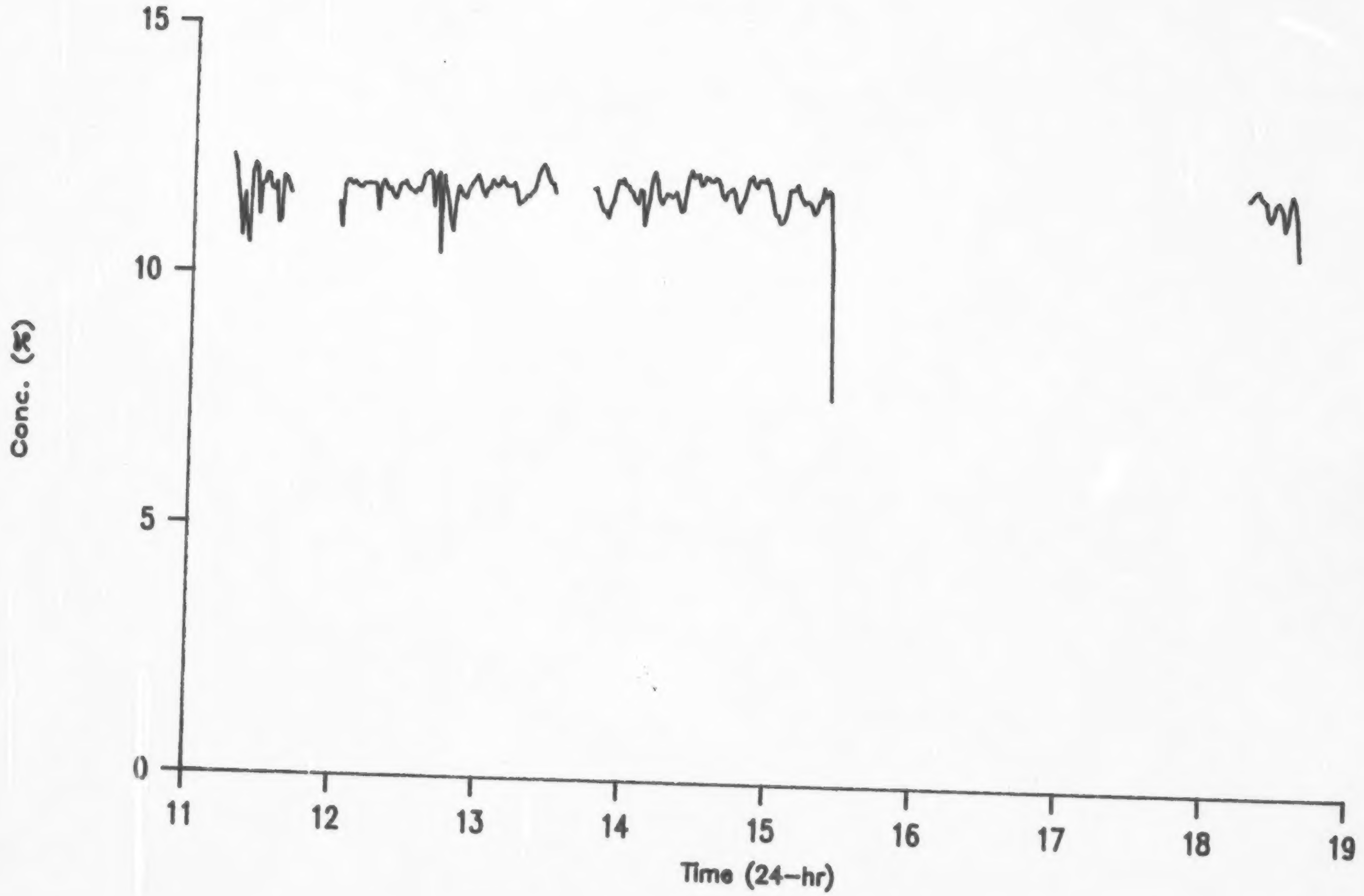
RUN #3 INLET SO2



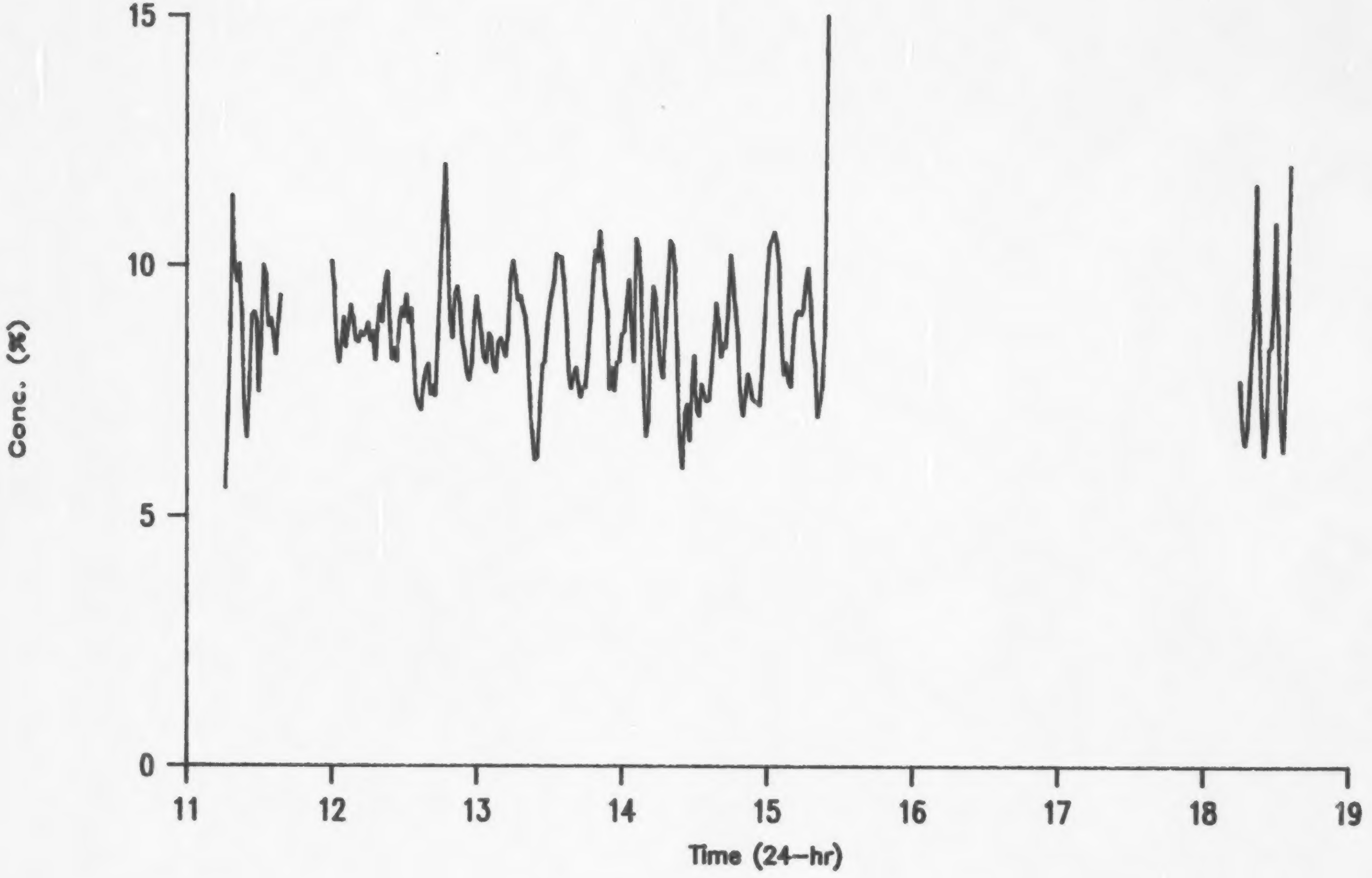
RUN #3 MIDPOINT OXYGEN



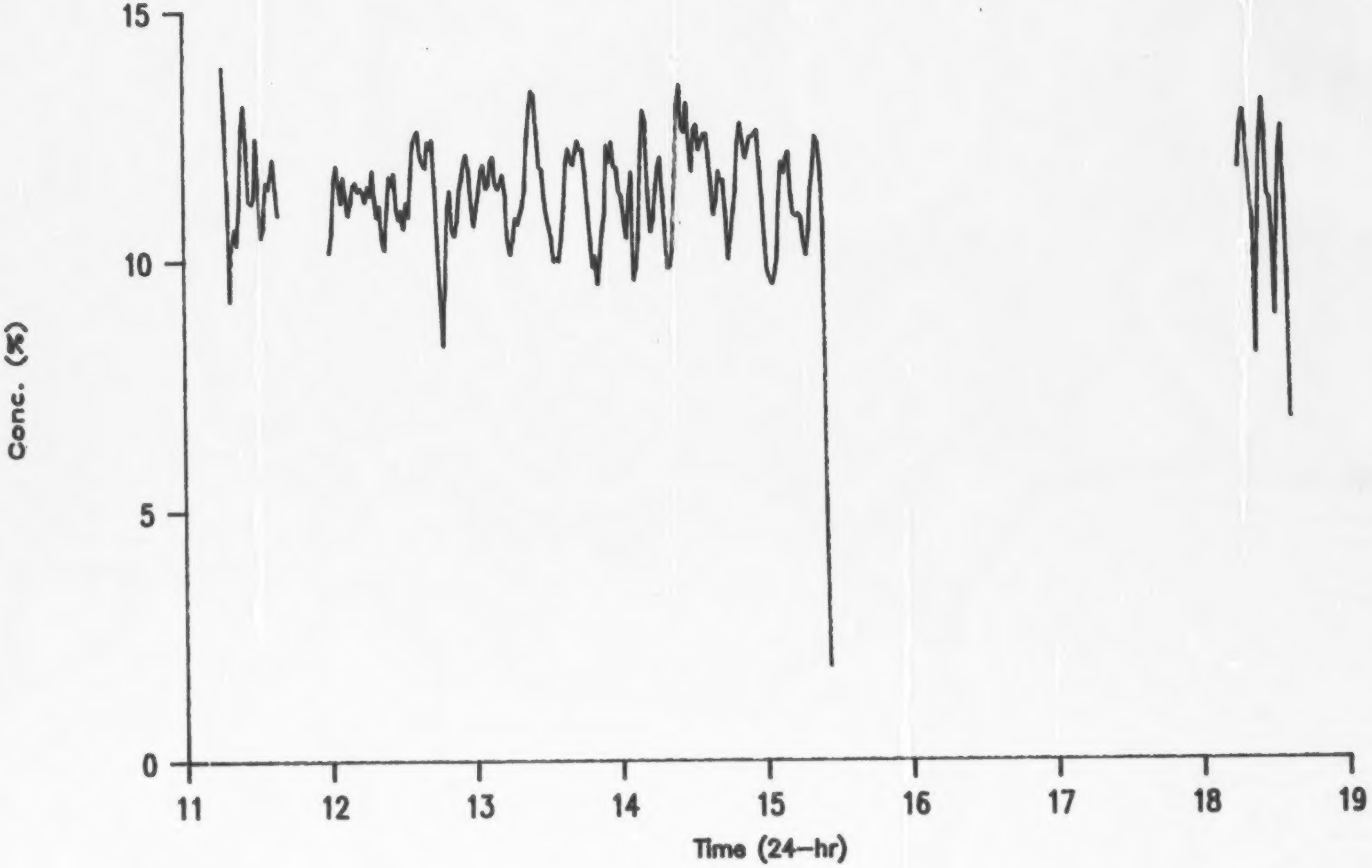
RUN #3 MIDPOINT CO2



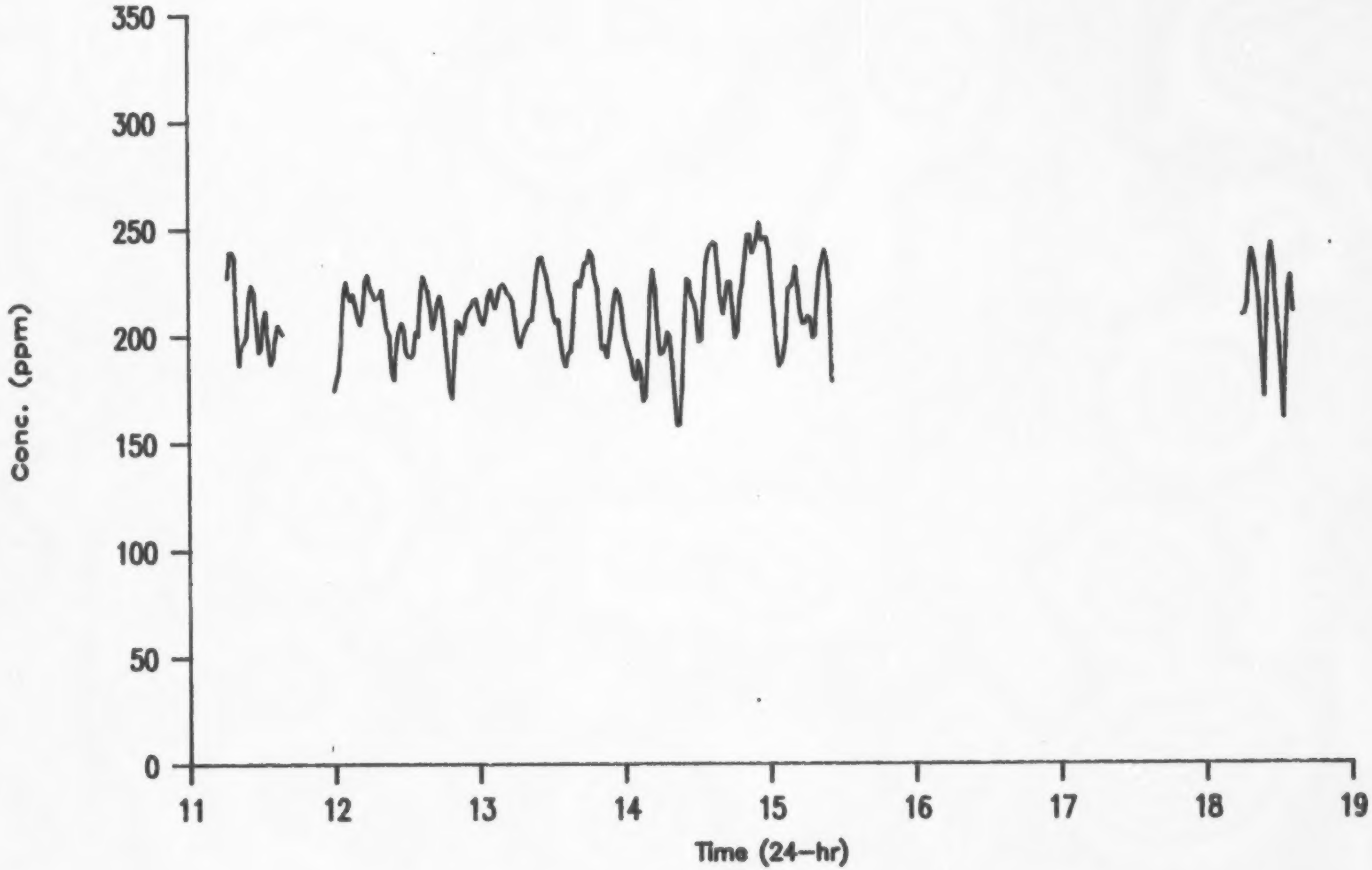
RUN #3 OUTLET OXYGEN



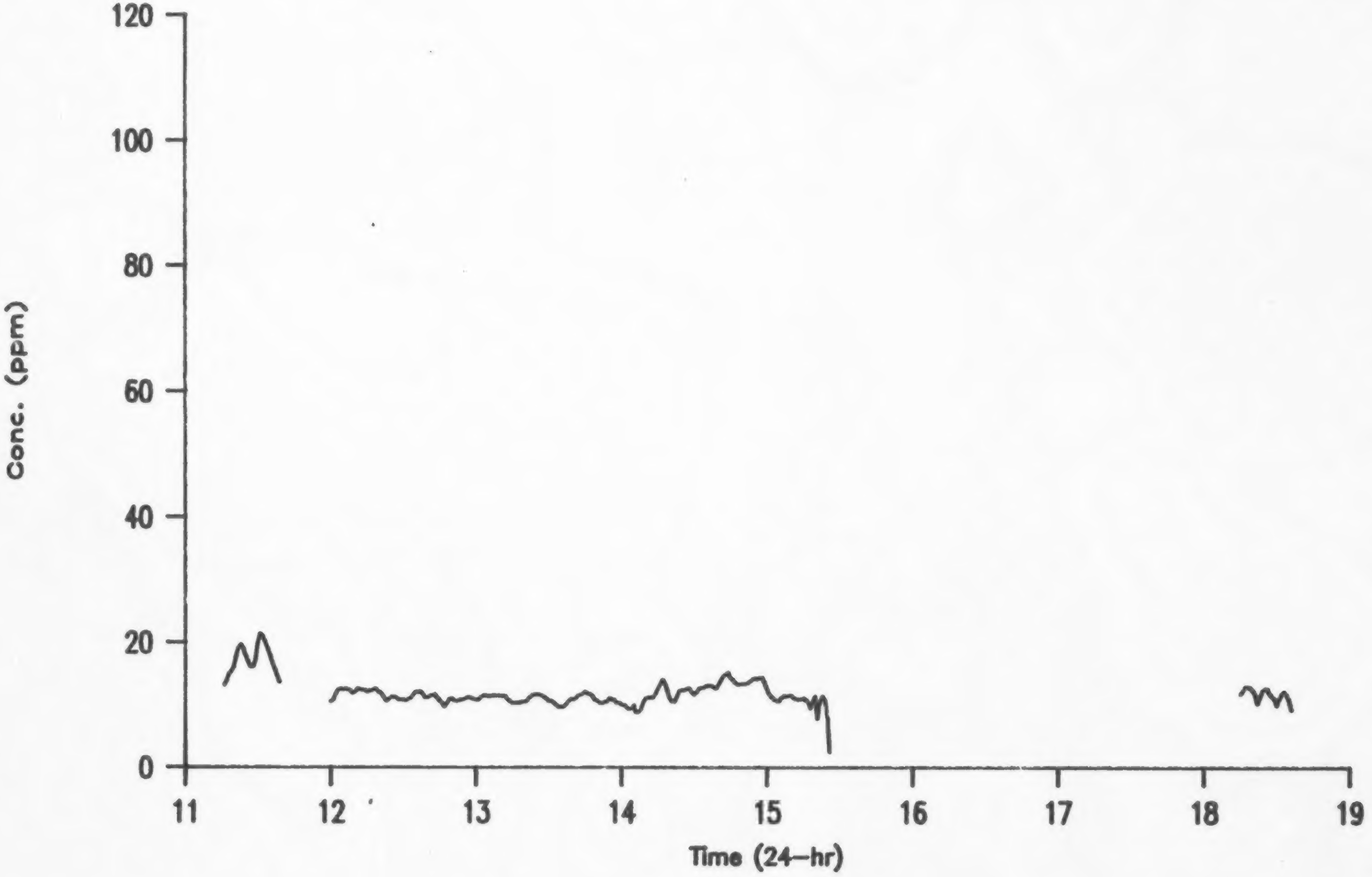
RUN #3 OUTLET CO2



RUN #3 OUTLET NOx



RUN #3 OUTLET SO2



F.2 Run 1 - Spray Dryer Inlet
Spray Dryer Outlet (Midpoint)
Baghouse Outlet

```
MR1AIN               (FILENAME)
MERC RUN 1A INLET    (DESCRIPTION)
12-09-1987           (DATE)
INLET                (LOCATION)
8910-L02-12          (MRI Project #)
LCONE                (OPERATOR)
               0          1          2          3          4
          O2        CO2        CO        THC        SO2
10:51          0.00      0.00      0.00      0.00      0.01
10:52          0.00      0.00      0.00      0.00      0.00
10:53          0.00      0.00      0.00      0.00      0.01
10:54          0.00      0.00      0.00      0.00      0.01
10:54 INIT. ZERO
 0    O2    0.00
 1   CO2    0.00
 2    CO    0.00
 4   SO2    0.01
MR1AIN
RUN #1A INLET
12-09-1987
INLET MERC
8910-L02-12
LC                   (Recorder Channel #'s)
               0          1          2          3          4
          O2        CO2        CO        THC        SO2
11:07          0.01      0.00      0.01      0.00      0.01
11:08          0.00      0.00      0.00      0.00      0.01
11:09          0.00      0.00      0.00      0.00      0.00
11:10          0.00      0.00      0.00      0.00      0.01
11:11          0.00      0.00      0.00      0.00      0.01
11:11 INIT. ZERO
 0    O2    0.00
 1   CO2    0.00
 2    CO    0.00
 4   SO2    0.01
MR1AIN
RUN #1A MERC
12-09-1987
INLET MERC
8310L02-12
LCONE
               0          1          2          3          4
          O2        CO2        CO        THC        SO2
11:14          2.50      1.70      2.36      6.72      3.10
11:15          2.79      1.63      2.30      5.55      3.10
11:15 INIT. ZERO
 0    O2    2.79
 1   CO2    1.63         <- CHART DIVISIONS
 2    CO    2.30                    ↓
 3   THC    5.55
 4   SO2    3.10
11:26          2.56      1.58      2.38      4.37     68.60
11:27          2.62      1.69      2.25      4.19     68.69
11:28          2.72      1.68      2.34      4.30     68.77
11:29          2.76      1.63      2.22      4.08     68.83
11:30          2.79      1.58      2.23      4.16     68.90
11:30 INIT. SPAN
 4   SO2   68.90    413.00
11:38         16.46     82.18     51.76      2.56      4.20
11:39         16.63     82.09     52.28      3.16      4.18
11:40         17.66     82.07     52.22      3.11      4.32
11:41         18.10     82.05     52.09      2.92      4.15
11:41 INIT. SPAN
 1   CO2   82.05      12.00
```

1st line shows chart divisions, 2nd line is concentration (% or ppm) →

Inlet - Initial leak check pass 12:05

```
 2   CO   52.09    336.00
11:50               58.59     2.01      2.28
11:51               58.67     2.11      2.31
11:52               58.71     2.02      2.24
11:53               58.77     1.95      2.32
11:54               58.78     1.95      2.32
10:55O2NI58.[illegible]   141094     2.17
13:28    54.29     56.76     42.06     15.35
13:28    12.88      6.31     243.1       1.0

13:29    54.46     56.05     33.25     15.83
13:29    12.93      6.18     184.0       1.1

13:30    55.32     57.40     46.21     15.75
13:30    13.14      6.44     271.9       1.1

13:31    55.26     58.30     53.46     15.77
13:31    13.13      6.61     324.0       1.1

13:32    54.68     60.52     40.07     16.32
13:32    12.98      7.05     227.6       1.1

13:33    53.43     61.10     34.23     16.43
13:33    12.67      7.16     188.4       1.2

13:34    52.55     62.23     29.57     16.04
13:34    12.45      7.39     158.1       1.1

13:35    51.87     61.00     26.12     16.39
13:35    12.28      7.14     136.8       1.2

13:36    51.83     62.60     31.66     15.85
13:36    12.27      7.47     171.2       1.1

13:37    51.33     65.55     26.69     15.45
13:37    12.15      8.09     139.0       1.1

13:38    48.77     76.30     26.22     15.69
13:38    11.50     10.35     132.4       1.1

13:39    41.54     75.63     17.42     15.67
13:39     9.70     10.39      81.6       1.1

13:40    38.91     80.70     13.99     14.88
13:40     9.04     11.65      61.5       1.0

13:41    35.25     79.14     11.61     15.23
13:41     8.12     11.26      48.9       1.0

13:42    34.54     77.57     11.31     15.30
13:42     7.94     10.87      47.5       1.0

13:43    36.48     70.07     13.28     14.83
13:43     8.43      9.09      59.3       1.0

13:44    42.58     70.01     24.59     11.36
13:44     9.96      9.07     124.8       0.6

13:45    44.33     71.39     28.55     14.70
13:45    10.39      9.39     148.3       1.0

13:46    44.19     71.11     27.99     14.68
13:46    10.36      9.32     145.0       1.0

13:47    44.33     71.12     29.99     14.71
13:47    10.39      9.33     157.4       1.0

13:48    43.49     73.04     29.37     14.58
13:48    10.18      9.77     152.7       1.0

13:49    42.89     73.54     28.22     14.15
13:49    10.03      9.89     145.5       0.9

13:50    42.95     73.87     29.25     14.30
13:50    10.05      9.97     151.7       0.9

13:51    42.41     74.51     30.50     14.61
13:51     9.91     10.12     159.1       1.0

13:52    41.93     75.00     29.80     14.11
```

```
[illegible]
13:53   41.07   75.53   31.77   13.85   12.95
13:53    9.58   10.37   166.5     0.9    61.8

13:54   41.09   69.64   34.83   14.26   12.25
13:54    9.58    8.99   188.5     0.9    57.5

13:55   44.59   71.01   50.12   14.38   11.90
13:55   10.46    9.30   290.8     0.9    55.3

13:56   44.92   75.62   48.34   14.29   12.37
13:56   10.54   10.39   275.0     0.9    58.2

13:57   40.95   78.22   36.90   14.40   13.16
13:57    9.55   11.03   197.4     0.9    63.2

13:58   37.70   77.60   27.82   14.14   14.32
13:58    8.73   10.87   141.5     0.9    70.5

13:59   37.61   80.27   26.56   12.92   15.22
13:59    8.71   11.54   133.0     0.8    76.1

14:00   34.55   82.56   25.02   13.97   17.06
14:00    7.95   12.13   123.1     0.9    87.6

14:01   31.94   81.79   22.95   14.02   17.52
14:01    7.29   11.94   111.4     0.9    90.5

14:02   32.08   81.94   20.89   14.47   17.47
14:02    7.33   11.97    99.6     0.9    90.2

14:03   32.38   79.38   19.77   13.69   16.78
14:03    7.40   11.32    93.9     0.9    85.9

14:04   34.31   78.42   19.69   13.80   16.16
14:04    7.89   11.08    93.7     0.9    82.0

14:05   36.45   76.49   18.04   13.60   15.09
14:05    8.42   10.60    84.8     0.9    75.3

14:06   38.36   76.51   18.19   13.32   14.15
14:06    8.90   10.60    85.7     0.8    69.4

14:07   38.96   76.36   17.97   13.30   13.61
14:07    9.05   10.57    84.5     0.8    66.0

14:08   39.07   77.87   17.64   13.48   13.49
14:08    9.08   10.94    82.3     0.8    65.2

14:09   37.85   79.79   16.42   14.18   13.73
14:09    8.77   11.42    75.0     0.9    66.8

14:10   35.52   80.28   15.48   12.89   14.11
14:10    8.19   11.55    69.8     0.8    69.1

14:11   35.60   76.39   15.00   13.13   13.63
14:11    8.21   10.58    67.8     0.8    66.1

14:12   38.16   78.85   16.93   13.08   13.67
14:12    8.85   11.18    78.1     0.8    66.4

14:13   36.46   81.25   16.34   12.95   14.19
14:13    8.42   11.80    74.3     0.8    69.6

14:14   34.50   79.00   15.64   13.20   14.11
14:14    7.93   11.22    70.9     0.8    69.1

14:15   35.41   81.50   17.64   13.22   14.46
14:15    8.16   11.86    81.4     0.8    71.3

14:16   33.23   84.45   16.63   13.04   15.97
14:16    7.62   12.63    75.1     0.8    80.8

14:17   29.74   87.31   15.07   13.20   18.42
14:17    6.74   13.41    66.1     0.8    96.2

14:18   25.99   86.72   15.22   13.53   19.76
14:18    5.81   13.24    67.0     0.8   104.6

14:19   26.69   78.73   17.47   13.62   17.71
14:19    5.98   11.15    81.2     0.9    91.7
```

```
14:20   33.96   71.49   17.15   13.64   15.38
14:20    7.80    9.41    80.9     0.9    77.1

14:21   41.01   73.36   21.82   22.27   14.66
14:21    9.56    9.85   107.4     1.8    72.6

14:22   41.95   74.53   19.15   21.69   14.58
14:22    9.80   10.12    91.6     1.7    72.1

14:23   41.31   75.47   18.08   16.26   14.69
14:23    9.64   10.35    85.3     1.1    72.8
14:27          28.55   86.31   13.20    4.40   23.27
14:28          27.24   83.83   15.34    3.84   21.91
14:29          29.49   82.23   15.52    2.39   20.10
14:30          30.83   84.12   15.76    2.23   19.99
14:31          30.00   83.03   15.01    2.09   19.73
14:32          31.55   79.73   15.71    2.17   18.09
14:32 INIT.  ZERO
 3  THC    2.17
14:33          33.65   76.72   16.57   70.98   16.98
14:34          36.38   75.48   16.49   70.67   16.32
14:35          39.82   73.74   17.46   70.54   15.71
14:35 INIT.  SPAN
 3  THC   70.54     10.03

14:36   41.18   77.72   19.39   18.71   17.75
14:36    9.60   10.90    92.2     2.4    91.9

14:37   39.33   79.47   17.44   16.40   19.04
14:37    9.14   11.34    80.8     2.1   100.0

14:38   36.79   78.27   15.98   16.18   18.82
14:38    8.51   11.04    72.9     2.1    98.7

14:39   37.68   75.54   15.54   15.94   12.35
14:39    8.73   10.37    71.0     2.0    58.1

14:40   39.75   75.11   16.42   14.88    9.78
14:40    9.25   10.26    76.1     1.9    42.0

14:41   40.32   76.90   16.86   14.82   11.35
14:41    9.39   10.70    78.1     1.9    51.8

14:42   39.21   77.96   17.13   14.70   11.82
14:42    9.11   10.96    79.4     1.8    54.8

14:43   37.20   80.81   16.57   14.28   13.82
14:43    8.61   11.68    75.6     1.8    67.3

14:44   34.13   80.99   15.98   14.34   15.11
14:44    7.84   11.73    72.4     1.8    75.4

14:45   33.37   81.16   15.68   14.70   15.09
14:45    7.65   11.77    70.7     1.8    75.2

14:46   34.88   74.34   15.44   14.67   12.65
14:46    8.03   10.08    70.7     1.8    59.9

14:47   39.59   73.36   17.08   14.87   12.34
14:47    9.21    9.85    80.1     1.9    58.0

14:48   41.80   74.54   16.76   15.06   11.57
14:48    9.76   10.13    78.0     1.9    53.2

14:49   41.24   68.36   15.61   14.90   10.05
14:49    9.62    8.70    72.7     1.9    43.6

14:50   46.48   68.23   30.45   14.77   10.32
14:50   10.93    8.67   161.4     1.8    45.3

14:51   47.53   73.41   36.71   15.15   11.18
14:51   11.19    9.86   198.8     1.9    50.7

14:52   41.58   77.36   29.93   14.87   13.04
14:52    9.71   10.81   154.4     1.9    62.4

14:53   38.99   78.94   18.50   14.98   13.69
14:53    9.06   11.21    86.9     1.9    66.5
```

```
14:54   36.11   79.13   16.55   15.60   14.09
14:54    8.34   11.25    75.9     2.0    69.0

14:55   35.60   75.49   15.46   15.59   13.20
14:55    8.21   10.36    70.6     2.0    63.4

14:56   39.02   78.52   20.73   15.72   12.77
14:56    9.07   11.10    99.6     2.0    60.7

14:57   35.96   82.85   19.52   15.84   14.58
14:57    8.30   12.21    91.6     2.0    72.1

14:58   30.51   86.41   17.15   15.93   15.44
14:58    6.94   13.16    77.5     2.0    77.4

14:59   27.07   87.03   16.12   14.12   15.79
14:59    6.08   13.33    71.8     1.8    79.6

15:00   23.99   87.59   17.37   15.52   15.68
15:00    5.31   13.48    78.4     2.0    79.0

15:01   22.87   87.49   15.31   15.58   15.83
15:01    5.03   13.46    67.3     2.0    79.9

15:02   23.05   86.56   17.32   15.23   16.38
15:02    5.07   13.20    78.4     1.9    83.3

15:03   24.45   84.95   16.57   14.90   15.59
15:03    5.42   12.77    74.7     1.9    78.4

15:04   26.22   85.26   15.04   14.67   14.93
15:04    5.86   12.85    66.4     1.8    74.3

15:05   26.56   83.68   17.73   14.64   14.09
15:05    5.95   12.43    81.4     1.8    69.0

15:06   29.32   76.41   15.91   14.36   12.70
15:06    6.64   10.58    72.9     1.8    60.3

15:07   36.67   74.95   17.38   14.13   11.13
15:07    8.48   10.23    81.5     1.8    50.4

15:08   39.58   73.06   19.04   14.09   10.95
15:08    9.20    9.78    91.4     1.7    49.3

15:09   41.66   72.28   18.88   14.09   10.90
15:09    9.73    9.60    90.6     1.7    49.0

15:10   43.29   69.49   18.71   13.95   10.25
15:10   10.13    8.95    90.3     1.7    44.9

15:11   44.37   75.67   21.32   13.99   10.90
15:11   10.40   10.40   103.8     1.7    49.0

15:12   40.14   78.79   17.13   14.20   11.44
15:12    9.35   11.17    79.2     1.8    52.4

15:13   37.03   78.24   14.05   14.15   12.84
15:13    8.57   11.03    62.3     1.8    61.2

15:14   36.53   80.35   14.25   14.02   13.71
15:14    8.44   11.56    63.0     1.7    66.6

15:15   33.04   85.18   15.20   14.25   15.24
15:15    7.57   12.83    67.2     1.8    76.2

15:16   28.77   83.89   17.17   14.69   14.80
15:16    6.50   12.48    78.3     1.8    73.5

15:17   29.15   85.26   15.67   14.76   15.41
15:17    6.60   12.85    69.8     1.8    77.3

15:18   27.75   85.68   12.99   14.40   17.10
15:18    6.25   12.96    55.3     1.8    87.9

15:19   27.23   83.27   15.23   14.60   17.62
15:19    6.12   12.32    67.8     1.8    91.1

15:20   30.27   81.22   15.74   15.04   17.45
15:20    6.88   11.79    71.0     1.9    90.1
```

```
15:21   31.93   83.01   13.97   15.05   15.78
15:21    7.29   12.25    61.0     1.9    79.6

15:22   30.64   83.41   12.91   14.45   14.09
15:22    6.97   12.36    55.2     1.8    69.0

15:23   30.91   80.75   13.57   14.58   12.88
15:23    7.04   11.67    59.2     1.8    61.4

15:24   32.66   80.83   13.82   14.30   13.58
15:24    7.47   11.69    60.6     1.8    65.8

15:25   33.50   78.18   13.00   14.22   12.87
15:25    7.68   11.02    56.5     1.8    61.3

15:26   36.07   78.14   13.44   13.82   12.96
15:26    8.33   11.01    59.0     1.7    61.9

15:27   36.40   80.39   13.73   12.32   11.47
15:27    8.41   11.57    60.2     1.5    52.5

15:28   34.73   77.71   12.30   14.27   14.76
15:28    7.99   10.90    52.8     1.8    73.2

15:29   36.47   77.50   12.55   14.16   15.32
15:29    8.43   10.85    54.2     1.8    76.7

15:30   36.93   77.09   13.49   14.32   14.53
15:30    8.54   10.75    59.4     1.8    71.8

15:31   37.78   79.57   13.26   12.90   12.41
15:31    8.75   11.36    57.7     1.6    58.5

15:32   35.11   79.17   13.41   13.85   12.03
15:32    8.09   11.26    58.6     1.7    56.1

15:33   34.41   78.50   13.43   14.02   13.12
15:33    7.91   11.10    58.9     1.7    62.9

15:34   34.09   83.89   14.08   13.79   14.53
15:34    7.83   12.48    61.5     1.7    71.7

15:35   27.75   88.60   14.34   13.86   17.13
15:35    6.25   13.76    61.9     1.7    88.0

15:36   20.95   91.71   19.18   14.23   22.64
15:36    4.55   14.64    87.2     1.8   122.7

15:37   17.26   88.68   42.10   15.06   21.36
15:37    3.62   13.79   223.9     1.9   118.4

15:38   21.42   84.83   25.71   15.84   15.64
15:38    4.66   12.73   126.3     2.0    78.7

15:39   27.32   78.71   16.99   16.30   15.87
15:39    6.14   11.15    78.5     2.1    80.2

15:40   33.75   76.89   15.41   16.29   15.27
15:40    7.75   10.70    70.0     2.1    76.4

15:41   37.31   75.53   15.87   16.04   14.70
15:41    8.64   10.37    72.8     2.0    72.8

15:42   38.95   73.46   16.18   15.32   14.12
15:42    9.05    9.87    75.0     1.9    69.2

15:43   41.15   74.68   16.14   14.92   13.62
15:43    9.60   10.16    74.6     1.9    66.0

15:44   39.73   75.70   15.91   14.86   12.89
15:44    9.24   10.41    73.0     1.9    61.4

15:45   39.85   72.37   15.90   15.21   11.32
15:45    9.27    9.61    73.6     1.9    51.6

15:46   41.47   76.07   16.49   15.10   13.47
15:46    9.68   10.50    76.2     1.9    65.1

15:47   38.27   79.47   14.56   14.78   15.28
15:47    8.88   11.34    64.8     1.9    76.5

15:48   34.13   82.71   13.35   14.69   16.01
```

START @ 1630

```
15:48    7.84   12.17    57.7     1.8    81.1

15:49   30.78   81.68   11.60   14.35   16.04
15:49    7.00   11.91    48.5     1.8    81.2

15:50   31.95   83.04   11.28   12.60   15.36
15:50    7.30   12.26    46.6     1.5    77.0

15:51   29.24   85.83   11.91   14.35   16.86
15:51    6.62   13.00    49.5     1.8    86.4

15:52   26.28   84.29   11.26   14.42   17.87
15:52    5.88   12.59    46.3     1.8    92.7

15:53   28.22   82.38   11.65   14.30   18.05
15:53    6.36   12.09    48.6     1.8    93.9

15:54   32.07   78.48   12.19   14.07   18.02
15:54    7.33   11.09    52.1     1.7    93.6

15:55   33.94   80.49   12.23   13.70   20.36
15:55    7.79   11.60    52.0     1.7   108.4

15:56   33.32   80.55   11.08   13.82   21.19
15:56    7.64   11.61    45.9     1.7   113.6

15:57   32.62   82.30   11.35   13.74   21.95
15:57    7.46   12.07    47.1     1.7   118.4

15:58   31.07   82.31   10.76   13.55   19.79
15:58    7.08   12.07    44.0     1.7   104.7

15:59   31.35   80.49   10.55   13.43   18.10
15:59    7.15   11.60    43.1     1.7    94.1

16:00   32.75   81.49   11.36   13.41   17.43
16:00    7.50   11.86    47.3     1.6    90.0

16:01   31.57   81.61   11.10   13.32   16.19
16:01    7.20   11.89    45.9     1.6    82.2

16:02   32.68   77.82   11.05   13.19   14.58
16:02    7.48   10.93    46.1     1.6    72.1

16:03   35.62   80.00   13.36   13.12   14.24
16:03    8.21   11.47    58.2     1.6    69.9

16:04   32.54   85.78   13.07   13.20   16.23
16:04    7.44   12.99    55.7     1.6    82.4

16:05   26.07   86.25   11.91   13.21   18.55
16:05    5.83   13.12    49.5     1.6    97.0

16:06   24.73   87.32   13.82   13.05   20.04
16:06    5.49   13.41    59.4     1.6   106.3

16:07   23.83   86.64   15.08   13.03   19.96
16:07    5.27   13.22    66.3     1.6   105.8

16:08   24.17   85.50   13.12   13.07   19.66
16:08    5.35   12.91    56.0     1.6   103.9

16:09   27.21   80.75   13.28   13.06   17.69
16:09    6.11   11.67    57.7     1.6    91.6

16:10   32.40   78.86   11.61   13.06   16.57
16:10    7.41   11.19    49.0     1.6    84.6

16:11   34.45   78.24   11.42   13.35   16.14
16:11    7.92   11.03    48.0     1.6    81.9

16:12   35.53   78.53   11.86   13.72   15.47
16:12    8.19   11.10    50.4     1.7    77.6

16:13   36.40   76.54   11.85   13.89   14.35
16:13    8.41   10.61    50.5     1.7    70.6

16:14   37.55   79.14   12.57   13.90   14.30
16:14    8.70   11.26    54.1     1.7    70.3

16:15   34.39   82.55   11.70   14.02   15.14
16:15    7.91   12.13    48.9     1.7    75.6

16:16   30.57   83.03   11.12   13.71   15.84
16:16    6.95   12.26    45.8     1.7    80.0

16:17   29.63   83.62   11.69   13.75   16.04
16:17    6.72   12.41    48.7     1.7    81.2

16:18   28.70   84.16   11.16   13.53   16.47
16:18    6.48   12.56    45.8     1.7    84.0

16:19   27.80   85.09   10.84   13.47   16.66
16:19    6.26   12.80    44.0     1.7    85.1

16:20   26.46   84.57   10.53   13.29   16.64
16:20    5.92   12.67    42.5     1.6    85.0

16:21   27.98   83.20   10.41   13.21   16.01
16:21    6.30   12.30    42.0     1.6    81.1

16:22   28.90   83.59   10.30   13.34   16.15
16:22    6.53   12.41    41.3     1.6    81.9

16:23   29.56   80.76   10.10   13.37   15.83
16:23    6.70   11.67    40.7     1.6    79.9

16:24   32.22   80.29   11.19   13.35   15.45
16:24    7.36   11.55    46.5     1.6    77.5

16:25   32.44   83.18   11.54   13.44   16.07
16:25    7.42   12.30    48.0     1.7    81.4

16:26   29.81   83.68   10.54   13.42   16.70
16:26    6.76   12.43    42.6     1.7    85.4

16:27   29.43   82.20   11.15   13.54   16.21
16:27    6.67   12.04    46.1     1.7    82.3

16:28   30.72   82.54   10.43   13.45   15.93
16:28    6.99   12.13    42.2     1.7    80.5

16:29   29.63   83.28   10.15   13.31   16.54
16:29    6.72   12.32    40.6     1.6    84.4

16:30   29.53   82.46   10.20   13.20   16.55
16:30    6.69   12.11    41.0     1.6    84.5

16:31   29.83   83.89    9.85   13.72   16.72
16:31    6.76   12.48    39.0     1.7    85.5

16:32   28.01   86.38    9.45   13.00   17.59
16:32    6.31   13.15    36.6     1.6    91.0

16:33   25.55   84.69   11.03   13.10   17.88
16:33    5.70   12.70    45.0     1.6    92.8

16:34   27.20   84.16   10.13   13.01   17.31
16:34    6.11   12.56    40.4     1.6    89.2

16:35   29.11   80.06    8.94   12.82   16.77
16:35    6.59   11.49    34.6     1.6    85.8

16:36   33.04   80.06    9.83   13.00   16.13
16:36    7.57   11.49    39.3     1.6    81.8

16:37   33.43   81.50    9.43   13.13   16.23
16:37    7.67   11.86    37.0     1.6    82.4

16:38   32.48   80.38    8.95   13.06   16.49
16:38    7.43   11.57    34.6     1.6    84.0

16:39   33.30   81.66    9.43   13.06   16.57
16:39    7.63   11.90    37.0     1.6    84.5

16:40   31.91   82.24    9.73   13.10   17.08
16:40    7.29   12.05    38.5     1.6    87.7

16:41   31.39   81.57    9.60   13.22   16.63
16:41    7.16   11.88    37.9     1.6    84.9

16:42   31.17   84.23   10.19   13.08   16.97
16:42    7.10   12.57    40.7     1.6    87.1
```

← THC air adjust

```
16:43   28.27   84.78    9.67   13.51   18.04
16:43    6.37   12.72    37.9     1.7    93.8

16:44   28.60   80.90    9.31   15.73   17.43
16:44    6.46   11.71    36.4     2.0    90.0

16:45   31.64   82.30   11.23   19.20   16.69
16:45    7.22   12.07    46.4     2.5    85.3

16:46   30.04   83.84   10.91   15.88   17.50
16:46    6.82   12.47    44.5     2.0    90.4

16:47   28.98   82.83   10.58   15.62   17.73
16:47    6.55   12.21    42.9     2.0    91.8

16:48   30.52   80.55   10.76   15.56   17.25
16:48    6.94   11.61    44.2     2.0    88.9

16:49   32.68   80.88   11.56   15.52   17.08
16:49    7.48   11.70    48.4     2.0    87.7

16:50   32.16   81.56   11.24   15.73   17.25
16:50    7.35   11.87    46.6     2.0    08.8

16:51   31.95   80.93   11.17   15.78   16.80
16:51    7.30   11.71    46.3     2.0    86.0

16:52   32.86   79.17   11.19   15.92   16.43
16:52    7.52   11.26    46.7     2.0    83.7

16:53   34.71   77.63   11.78   15.86   15.80
16:53    7.99   10.88    50.1     2.0    79.8

16:54   36.55   78.16   12.78   15.80   15.58
16:54    8.45   11.01    55.4     2.0    78.4

16:55   35.64   80.26   13.21   16.13   15.67
16:55    8.22   11.54    57.4     2.0    78.9

16:56   33.61   78.74   12.76   16.58   15.33
16:56    7.71   11.16    55.2     2.1    76.8

16:57   36.00   75.89   13.32   16.43   13.50
16:57    8.31   10.45    58.7     2.1    65.3

16:58   38.56   75.80   14.80   16.39   12.27
16:58    8.95   10.43    66.8     2.1    57.6

16:59   37.50   80.20   15.83   16.30   12.39
16:59    8.68   11.53    71.7     2.1    58.3

17:00   32.61   85.24   13.86   16.01   14.08
17:00    7.46   12.84    60.0     2.0    68.9

17:01   26.29   86.65   12.35   15.86   16.21
17:01    5.88   13.23    51.7     2.0    82.3

17:02   25.86   82.34   11.88   15.97   15.42
17:02    5.77   12.08    49.9     2.0    77.4

17:03   30.31   70.35   14.44   15.95   13.45
17:03    6.89    9.15    65.8     2.0    65.0

17:04   44.33   70.73   13.53   16.01   10.17
17:04   10.39    9.24    60.6     2.0    44.4

17:05   38.37   82.77   11.60   16.09    9.67
17:05    8.90   12.19    48.3     2.0    41.2

17:06   33.07   79.88   13.43   16.41    9.60
17:06    7.58   11.45    58.7     2.1    40.8

17:07   33.70   80.43   13.94   16.39    9.79
17:07    7.73   11.58    61.3     2.1    42.0

17:08   33.27   79.54   13.49   16.22   10.00
17:08    7.63   11.36    59.0     2.1    43.3

17:09   34.95   78.05   14.23   16.69    9.39
17:09    8.05   10.98    53.3     2.1    39.5
```

← emptied THC water

```
17:10   36.33   77.73   15.21   16.96    8.85
17:10    8.39   10.91    68.8     2.2    36.1

17:11   36.22   79.34   15.01   13.30    8.64
17:11    8.36   11.31    67.4     1.6    34.8

17:12   35.18   78.08   14.86   17.15    8.40
17:12    8.10   10.99    66.8     2.2    33.3
```

outlet mai

```
17:13   36.12   79.16   15.08   17.07    8.39
17:13    8.34   11.26    67.8     2.2    33.2

17:14   34.43   81.30   14.92   17.30    8.63
17:14    7.92   11.81    66.5     2.2    34.7

17:15   32.51   80.91   14.89   17.16    8.37
17:15    7.44   11.71    66.4     2.2    33.1

17:16   32.25   82.36   13.96   17.26    8.27
17:16    7.37   12.08    61.1     2.2    32.5

17:17   31.08   78.56   12.82   17.63    7.82
17:17    7.08   11.11    55.5     2.3    29.7

17:18   34.96   77.53   14.01   17.89    7.46
17:18    8.05   10.86    62.2     2.3    27.4

17:19   36.95   74.55   14.29   17.57    7.11
17:19    8.55   10.13    64.3     2.3    25.2

17:20   40.25   72.03   15.43   17.46    6.90
17:20    9.37    9.54    71.1     2.2    23.9

17:21   41.22   78.38   18.12   17.19    6.62
17:21    9.62   11.07    84.9     2.2    22.1

17:22   34.79   84.87   14.17   16.72    6.74
17:22    8.01   12.74    61.7     2.1    22.9

17:23   28.31   85.57   11.68   16.69    6.74
17:23    6.39   12.93    48.4     2.1    22.8

17:24   25.93   85.12   12.60   16.98    6.99
17:24    5.79   12.81    53.3     2.2    24.4

17:25   27.54   81.62   11.96   16.81    7.30
17:25    6.19   11.89    50.4     2.1    26.4

17:26   31.41   78.83   11.65   16.54    7.30
17:26    7.16   11.18    49.2     2.2    26.4

17:27   34.45   77.12   12.63   17.43    7.22
17:27    7.92   10.75    54.7     2.2    25.9

17:28   36.51   78.18   13.24   17.69    7.42
17:28    8.44   11.02    57.9     2.3    27.1

17:29   34.83   78.83   12.74   17.52    7.60
17:29    8.02   11.18    55.1     2.3    28.3

17:30   34.45   80.28   12.30   17.29    8.12
17:30    7.92   11.55    52.5     2.2    31.5

17:31   33.80   77.59   11.89   17.43    8.22
17:31    7.76   10.87    50.6     2.2    32.1

17:32   35.95   76.24   12.28   17.64    8.47
17:32    8.30   10.54    52.9     2.3    33.7

17:33   38.25   74.50   13.24   18.05    8.56
17:33    8.87   10.12    58.5     2.3    34.3

17:34   39.05   76.27   13.98   17.98    8.99
17:34    9.07   10.55    62.2     2.3    37.0

17:35   37.72   78.70   13.16   17.88    9.56
17:35    8.74   11.15    57.4     2.3    40.6

17:36   34.97   79.46   12.34   17.80   10.20
17:36    8.05   11.34    52.8     2.3    44.6

17:37   33.73   82.83   12.00   18.02   11.54
17:37    7.74   12.21    50.5     2.3    53.0
```

```
17:38   30.03   82.16   10.88   18.04   12.28
17:38    6.82   12.03    44.6     2.3    57.6

17:39   30.96   81.95   11.27   17.38   13.17
17:39    7.05   11.98    46.7     2.2    63.2

17:40   31.07   81.56   11.51   16.63   13.80
17:40    7.08   11.87    48.0     2.1    67.2

17:41   31.89   80.25   11.10   15.89   14.15
17:41    7.28   11.54    46.0     2.0    69.4

17:42   31.77   83.22   11.24   15.66   16.39
17:42    7.25   12.31    46.4     2.0    83.4

17:43   28.35   86.10   10.57   15.87   17.71
17:43    6.40   13.08    42.5     2.0    91.7

17:44   25.70   81.84   10.77   15.89   17.01
17:44    5.73   11.95    44.1     2.0    87.3

17:45   31.78   76.51   11.48   15.84   15.95
17:45    7.25   10.60    48.6     2.0    80.7

17:46   38.10   72.17   12.56   15.88   13.22
17:46    8.84    9.57    55.0     2.0    63.5

17:47   41.73   73.80   15.28   15.98   13.07
17:47    9.74    9.95    69.9     2.0    62.6

17:48   40.37   74.75   15.31   16.20   12.28
17:48    9.40   10.18    69.9     2.1    57.6

17:49   39.44   75.99   14.26   16.27   11.55
17:49    9.17   10.48    63.8     2.1    53.1

17:50   37.84   79.35   13.10   15.91   12.49
17:50    8.77   11.31    56.9     2.0    59.0

17:51   34.54   81.02   12.32   15.83   13.15
17:51    7.94   11.73    52.5     2.0    63.1

17:52   31.65   81.47   11.14   15.83   13.84
17:52    7.22   11.85    46.1     2.0    67.4

17:53   31.23   83.25    9.94   15.95   13.99
17:53    7.12   12.32    39.5     2.0    68.4

17:54   27.67   85.80   10.23   16.18   15.82
17:54    6.23   12.99    40.7     2.1    79.8

17:55   24.65   86.94   10.15   16.42   15.70
17:55    5.47   13.31    40.2     2.1    79.1

17:56   23.45   85.90   10.22   16.47   16.61
17:56    5.17   13.02    40.7     2.1    84.8

17:57   25.24   83.67   10.05   16.34   15.54
17:57    5.62   12.43    40.0     2.1    78.1

17:58   27.76   83.07   10.37   16.13   14.47
17:58    6.25   12.27    41.8     2.0    71.4

17:59   28.17   83.03   10.16   16.03   15.80
17:59    6.35   12.26    40.7     2.0    79.7

18:00   29.67   81.62   10.97   15.96   15.50
18:00    6.73   11.89    45.2     2.0    77.9

18:01   30.77   79.50   10.49   15.89   14.87
18:01    7.00   11.35    42.9     2.0    73.9

18:02   33.29   77.71   10.25   15.75   13.65
18:02    7.63   10.90    41.8     2.0    66.2

18:03   36.19   75.63   11.32   15.68   12.57
18:03    8.36   10.39    47.8     2.0    59.5

18:04   38.04   75.05   11.84   15.63   11.37
18:04    8.82   10.25    50.7     2.0    51.9
```

```
18:05   39.64   73.65   11.97   15.62   11.22
18:05    9.22    9.92    51.6     2.0    51.0

18:06   40.70   75.56   12.79   15.59   10.76
18:06    9.48   10.37    55.8     2.0    48.1

18:07   37.59   78.58   13.03   15.61   11.74
18:07    8.71   11.12    56.7     2.0    54.3

18:08   34.33   79.94   11.63   15.60   12.05
18:08    7.89   11.46    48.9     2.0    56.2

18:09   34.60   78.10   11.53   15.65   11.67
18:09    7.96   11.00    48.6     2.0    53.8

18:10   35.25   77.32   12.17   15.68   11.66
18:10    8.12   10.80    52.2     2.0    53.8

18:11   36.15   77.62   12.50   15.67   11.77
18:11    8.35   10.88    54.0     2.0    54.5

18:12   36.31   79.11   12.63   15.61   12.02
18:12    8.39   11.25    54.4     2.0    56.0

18:13   34.92   78.65   12.69   15.48   11.53
18:13    8.04   11.13    54.8     2.0    52.9

18:14   34.15   78.79   11.73   15.30   12.82
18:14    7.85   11.17    49.6     1.9    61.0

18:15   35.40   78.43   12.11   15.21   12.95
18:15    8.16   11.08    51.7     1.9    61.9

18:16   35.89   78.38   12.76   15.22   13.14
18:16    8.28   11.07    55.3     1.9    63.0

18:17   35.26   77.27   12.84   15.15   13.28
18:17    8.12   10.79    55.8     1.9    63.9

18:18   38.07   74.85   14.02   15.25   12.64
18:18    8.83   10.20    62.7     1.9    59.9

18:19   39.11   72.76   15.43   16.63   12.13
18:19    9.09    9.71    70.9     2.1    56.7

18:20   44.05   65.28   18.12   18.47   10.69
18:20   10.32    8.03    87.8     2.4    47.6

18:21   49.74   68.74   32.07   16.58   10.17
18:21   11.75    8.79   171.4     2.1    44.4

18:22   42.97   75.86   38.18   15.90   11.07
18:22   10.05   10.45   207.0     2.0    50.0

18:23   38.40   78.71   19.50   15.81   12.40
18:23    8.91   11.15    92.6     2.0    58.4

18:24   35.32   79.73   16.71   15.69   12.56
18:24    8.14   11.41    76.7     2.0    59.4

18:25   32.83   81.00   15.86   15.54   14.37
18:25    7.52   11.73    71.7     2.0    70.7

18:26   33.80   77.50   16.00   15.36   12.99
18:26    7.76   10.85    73.2     1.9    62.1

18:27   35.25   79.88   18.53   15.42   12.79
18:27    8.12   11.45    86.8     1.9    60.8

18:28   33.00   80.09   17.42   15.47   12.85
18:28    7.56   11.50    80.5     2.0    61.2

18:29   31.76   81.81   15.33   15.64   12.83
18:29    7.25   11.94    68.6     2.0    61.1

18:30   30.82   81.70   14.59   15.70   12.64
18:30    7.01   11.91    64.6     2.0    59.9

18:31   31.45   78.77   14.26   15.58   11.87
18:31    7.17   11.16    63.3     2.0    55.1

18:32   35.24   74.55   14.63   15.52   11.15
```

```
18:32    8.12   10.13    66.2     2.0    50.5

18:33   39.49   75.49   16.58   15.53   11.03
18:33    9.18   10.36    76.8     2.0    49.8

18:34   38.38   74.92   16.36   15.43   11.62
18:34    8.90   10.22    75.7     1.9    53.5

18:35   39.93   74.98   15.26   15.36   11.7[illegible]
18:35    9.29   10.23    69.6     1.9    54.0

18:36   39.93   74.12   15.73   15.41   10.75
18:36    9.29   10.03    72.4     1.9    48.0

18:37   39.32   77.61   15.36   15.45   11.88
18:37    9.14   10.87    69.6     1.9    55.1

18:38   35.77   78.74   13.71   15.65   12.21
18:38    8.25   11.16    60.4     2.0    57.2

18:39   34.74   78.06   12.46   15.62   11.40
18:39    7.99   10.99    53.6     2.0    52.1

18:40   36.36   75.20   13.64   15.58   10.70
18:40    8.40   10.29    60.5     2.0    47.7

18:41   38.46   76.93   13.61   15.54   10.65
18:41    8.93   10.71    60.1     2.0    47.4

18:42   36.64   80.24   13.04   11.61    9.85
18:42    8.47   11.54    56.4     1.4    42.4

18:43   36.37   53.85   12.52   15.02    9.29
18:43    8.40    5.77    57.1     1.9    38.9

18:44   62.36   23.14   41.02   15.14    7.27
18:44   14.90    1.49   248.1     1.9    26.2

18:45   76.35   15.00   62.50   15.61    6.29
18:45   18.40    0.79   417.5     2.0    20.1

18:46   80.98   11.47   57.07   15.63    5.72
18:46   19.56    0.55   373.9     2.0    16.5

16:47   82.68    9.27   53.22   16.04    5.35
18:47   19.99    0.41   343.6     2.0    14.2

18:48   83.62    7.89   47.72   17.68    4.96
18:48   20.22    0.33   301.1     2.3    11.7

18:49   84.17    6.83   42.99   18.95    4.73
18:49   20.36    0.28   265.6     2.5    10.2

18:50   84.63    6.00   38.77   22.20    4.58
18:50   20.48    0.24   234.8     2.9     9.3

18:51   84.88    5.57   34.54   24.56    4.47
18:51   20.54    0.21   204.7     3.3     8.6

18:52   85.09    5.08   31.07   20.92    4.39
18:52   20.59    0.19   180.6     2.8     8.1

18:53   85.27    4.60   28.83   22.47    4.32
18:53   20.64    0.17   165.4     3.0     7.7

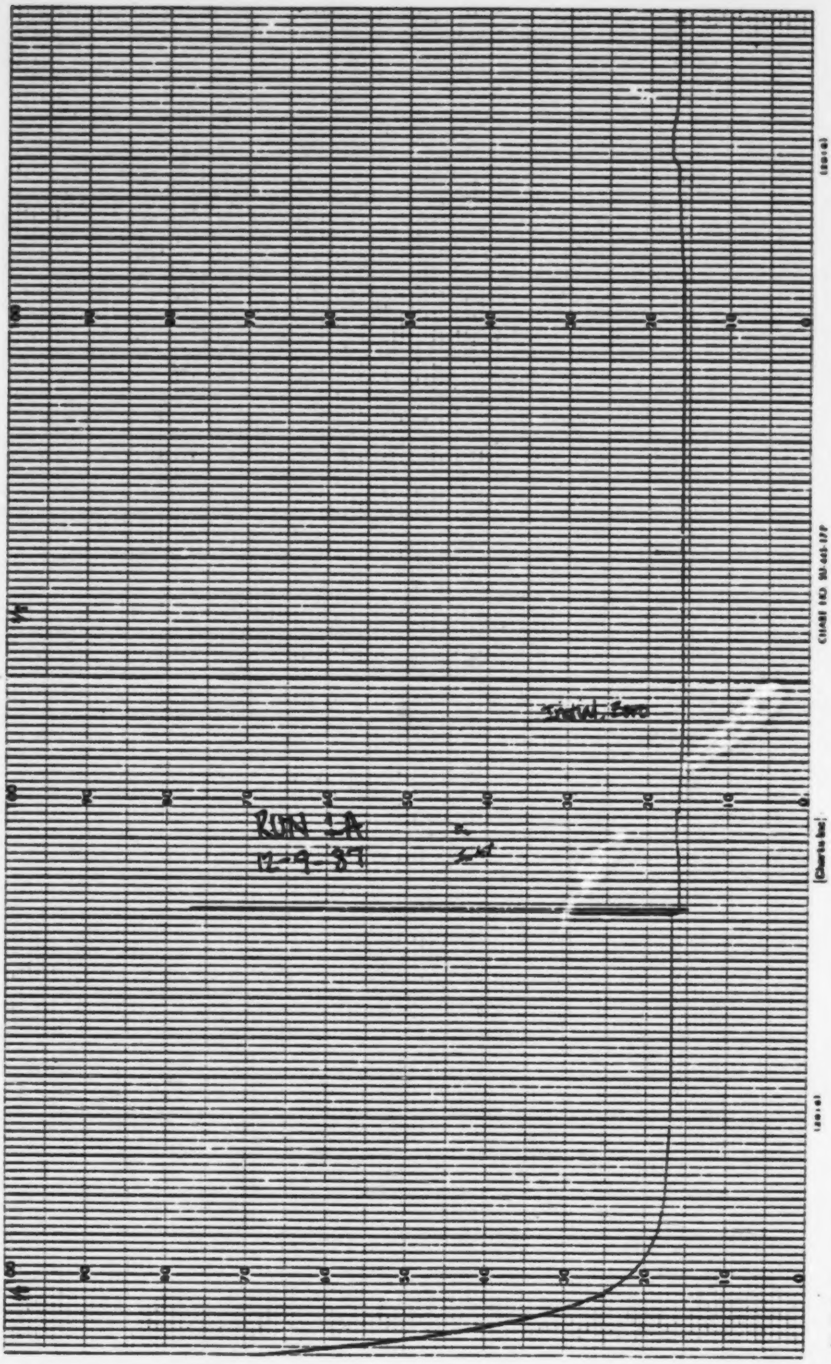
18:54   85.39    4.40   26.60   22.54    4.26
18:54   20.67    0.16   150.3     3.0     7.3

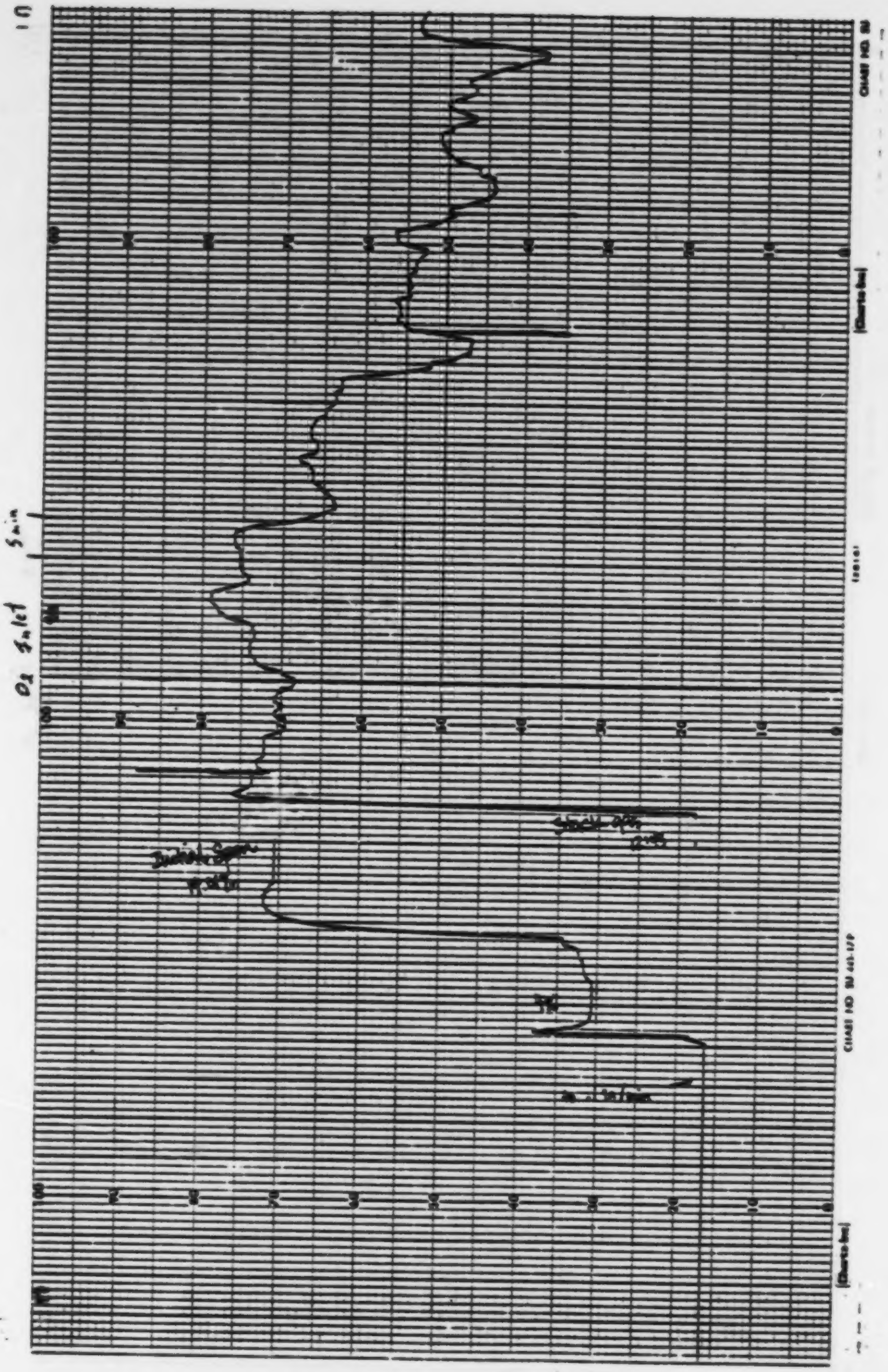
18:55   85.43    3.94   24.62   18.09    7.55
18:55   20.68    0.14   137.3     2.3    28.0

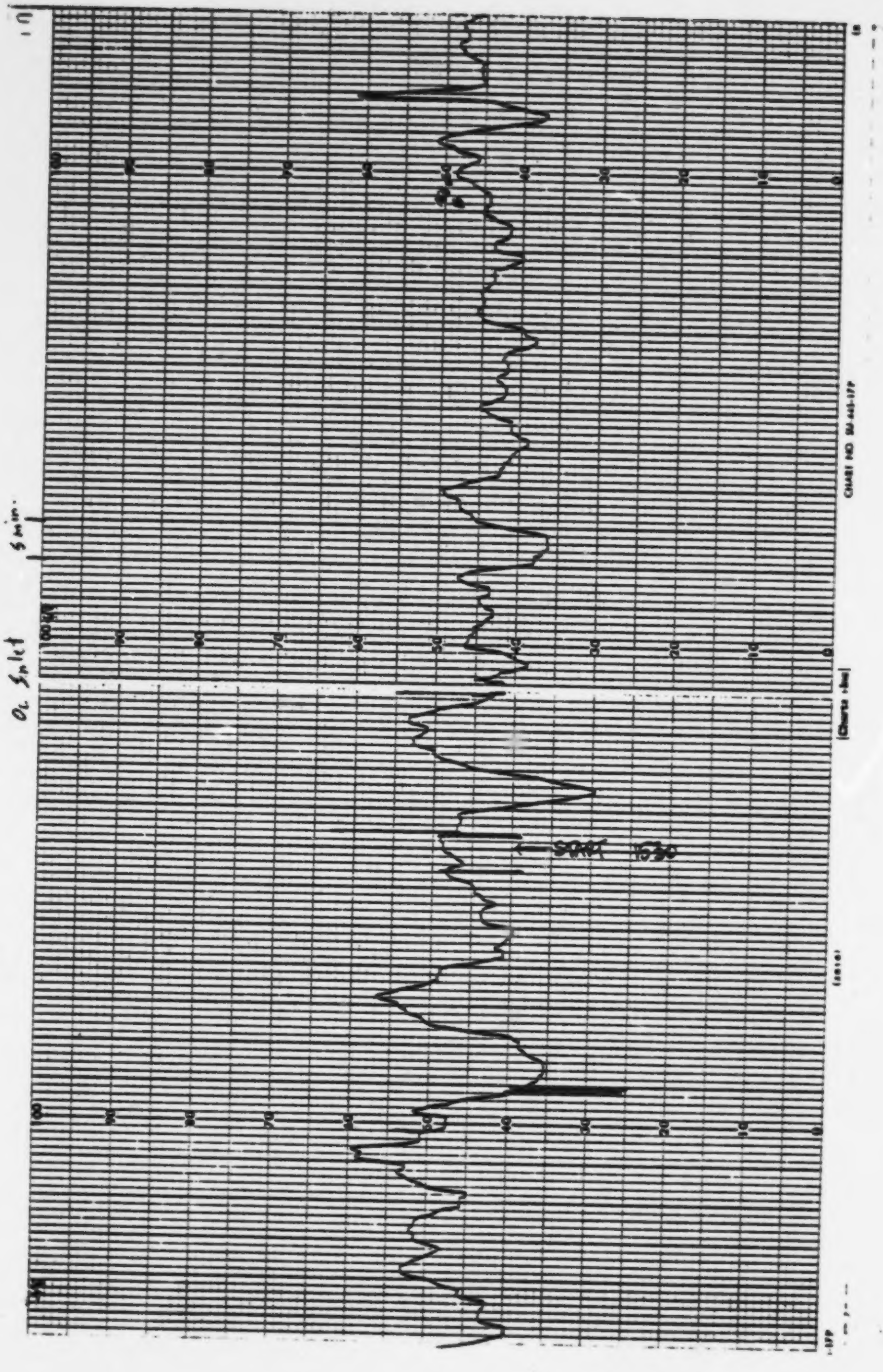
19:06   86.09    3.05   11.58   66.90    3.87
19:06   20.84    0.10    54.8     9.5     4.9

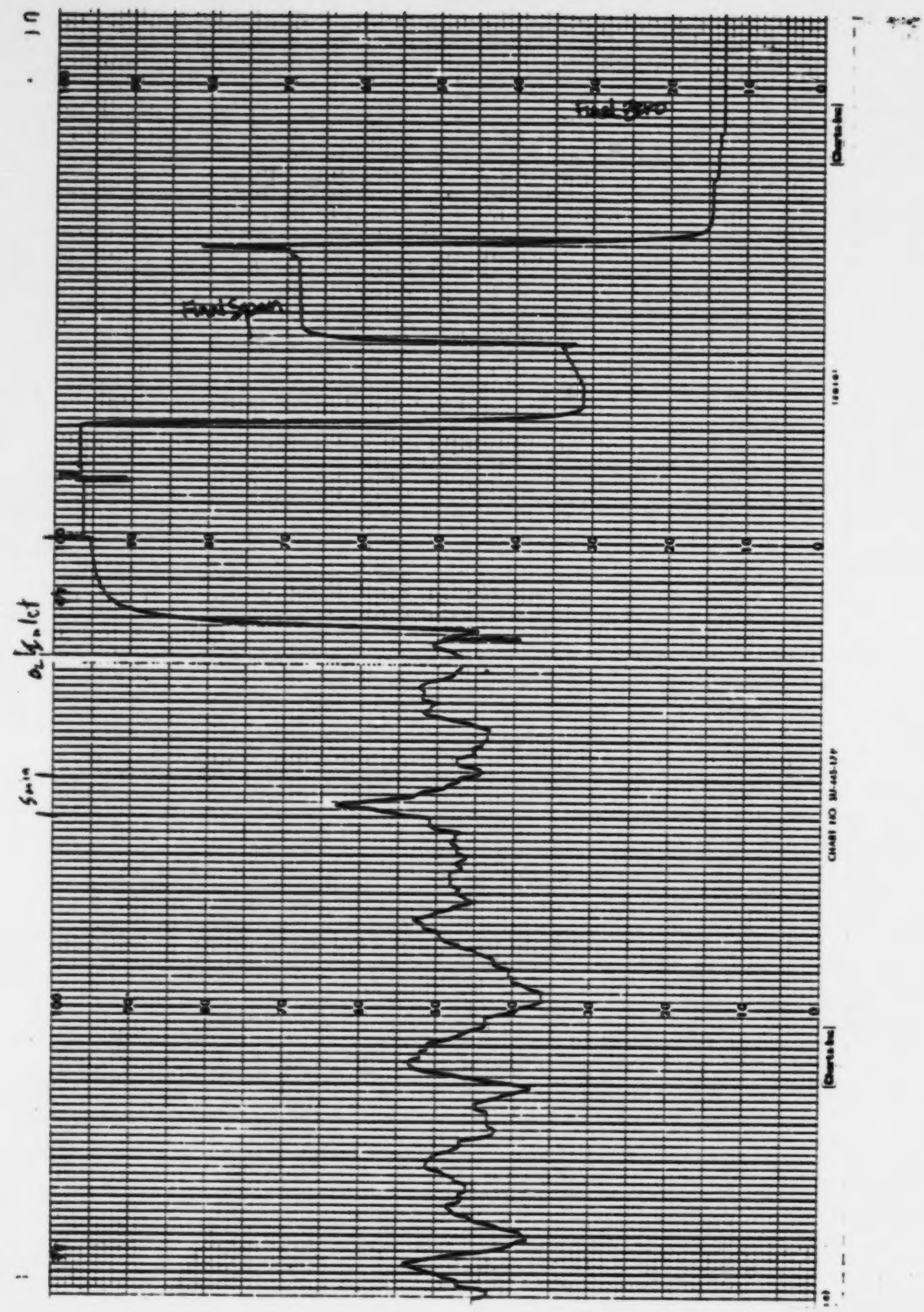

19:08          86.08    2.88   10.09   93.12    3.86
19:09          86.09    5.84    9.66   93.66    3.87
19:10          69.53   78.11   11.21   94.46    3.91
19:11          24.37   81.09   40.61   95.28    3.86
19:12          18.49   81.10   49.59   95.87    3.67
```

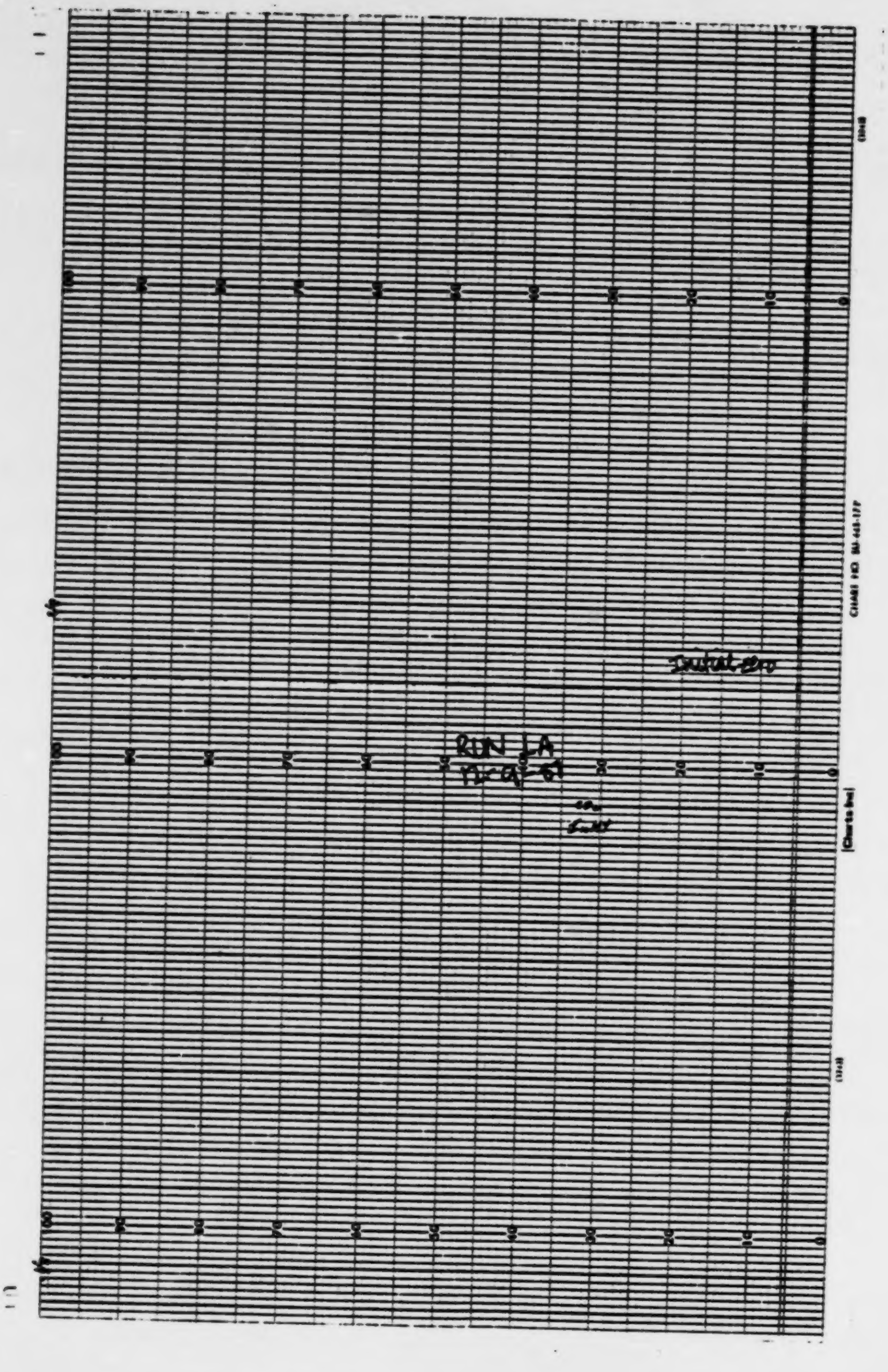
```
19:14          18.48   81.07   50.25   96.60    3.63
19:15          18.98   81.05   50.30   96.39    3.63
19:15FINAL SPAN
 3  THC  96.39    10.03
19:16          19.67   80.96   50.23   39.27    3.61
19:17          20.10   80.88   50.26    0.10    3.63
19:18          20.66   80.99   50.19    0.09    3.64
19:18FINAL SPAN
 1  CO2  80.99    12.00
 2   CO  50.19   336.00
19:19          21.35   80.96   50.30    0.17    3.64
19:20          21.06   72.43   50.29    0.17    3.61
19:21          43.62    3.54   32.20    0.17    3.52
19:22          56.29    2.35    2.45    0.16    3.52
19:22FINAL ZERO
 3  THC   0.16
19:28          57.39    1.76    0.55    0.00    3.50
19:29          57.49    1.75    0.60    0.00    3.50
19:30          57.52    1.84    0.56    0.00    3.50
19:30FINAL SPAN
 0   O2  57.52    14.01
19:42           0.12    1.57    0.39    0.00   46.61
19:43           0.00    1.71    0.29    0.00   46.63
19:44           0.00    1.64    0.40    0.00   46.69
19:45           0.00    1.69    0.34    0.00   46.73
19:46           0.00    1.64    0.29    0.00   44.63
19:47           0.00    1.74    0.40    0.00   32.13
19:48           0.00    1.60    0.39    0.00   45.44
19:49           0.00    1.69    0.33    0.00   46.83
19:50           0.00    1.73    0.32    0.00   46.76
19:51           0.00    1.64    0.32    0.00   46.83
19:51FINAL SPAN
 4  SO2  46.83   413.00
19:59           0.00    1.65    0.31    0.00    3.90
20:00           0.00    1.60    0.33    0.00    3.86
20:01           0.00    1.73    0.21    0.00    3.82
20:02           0.00    1.66    0.46    0.00    3.77
20:03           0.00    1.54    0.30    0.00    3.74
20:04           0.00    1.53    0.28    0.00    3.71
20:04FINAL ZERO
 0   O2    0.00
 1  CO2    1.53
 2   CO    0.28
 4  SO2    3.71
```

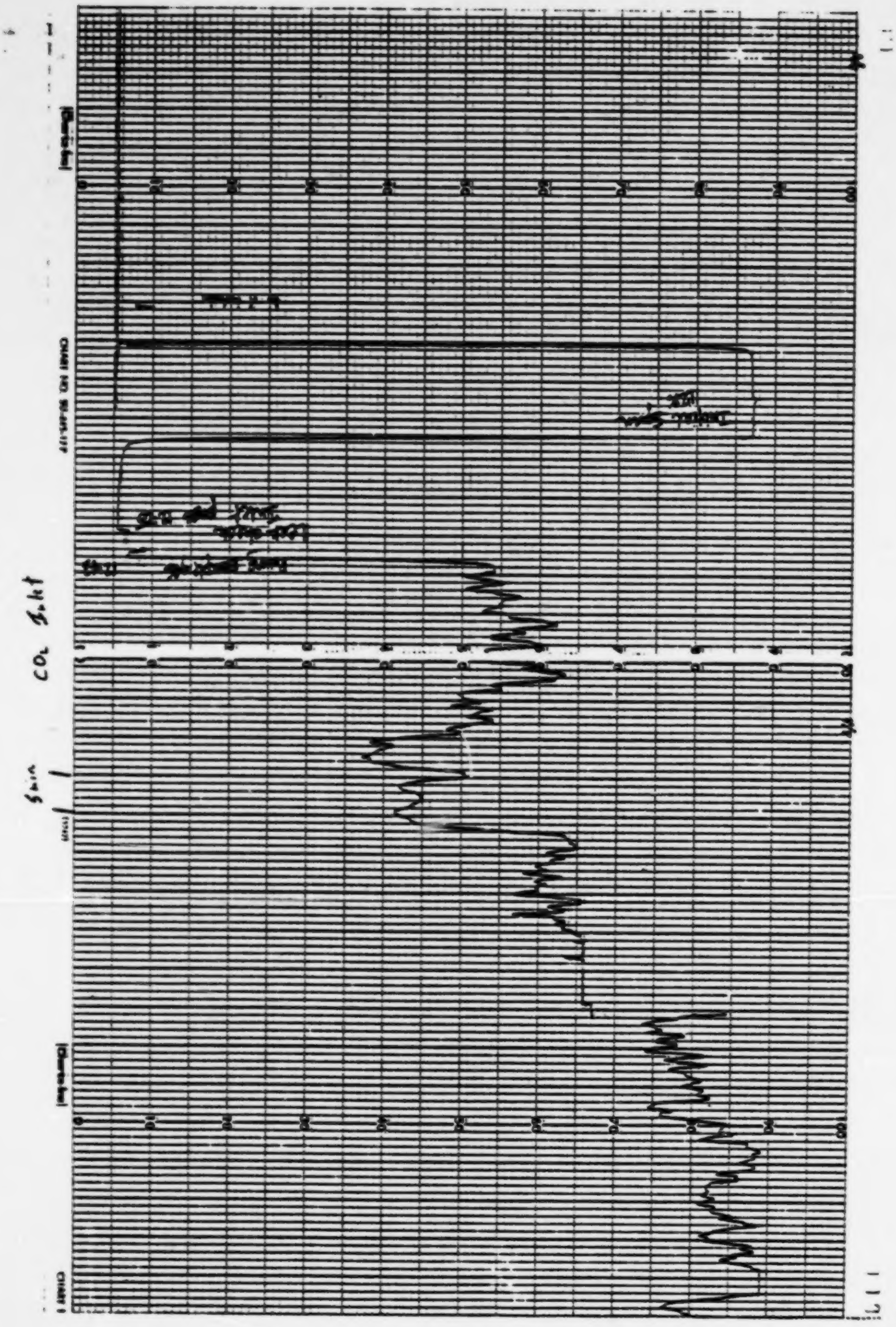

100
90
80
70
60
50
40
30
20
10
0
Initial Zero
RUN 2A
12-9-87

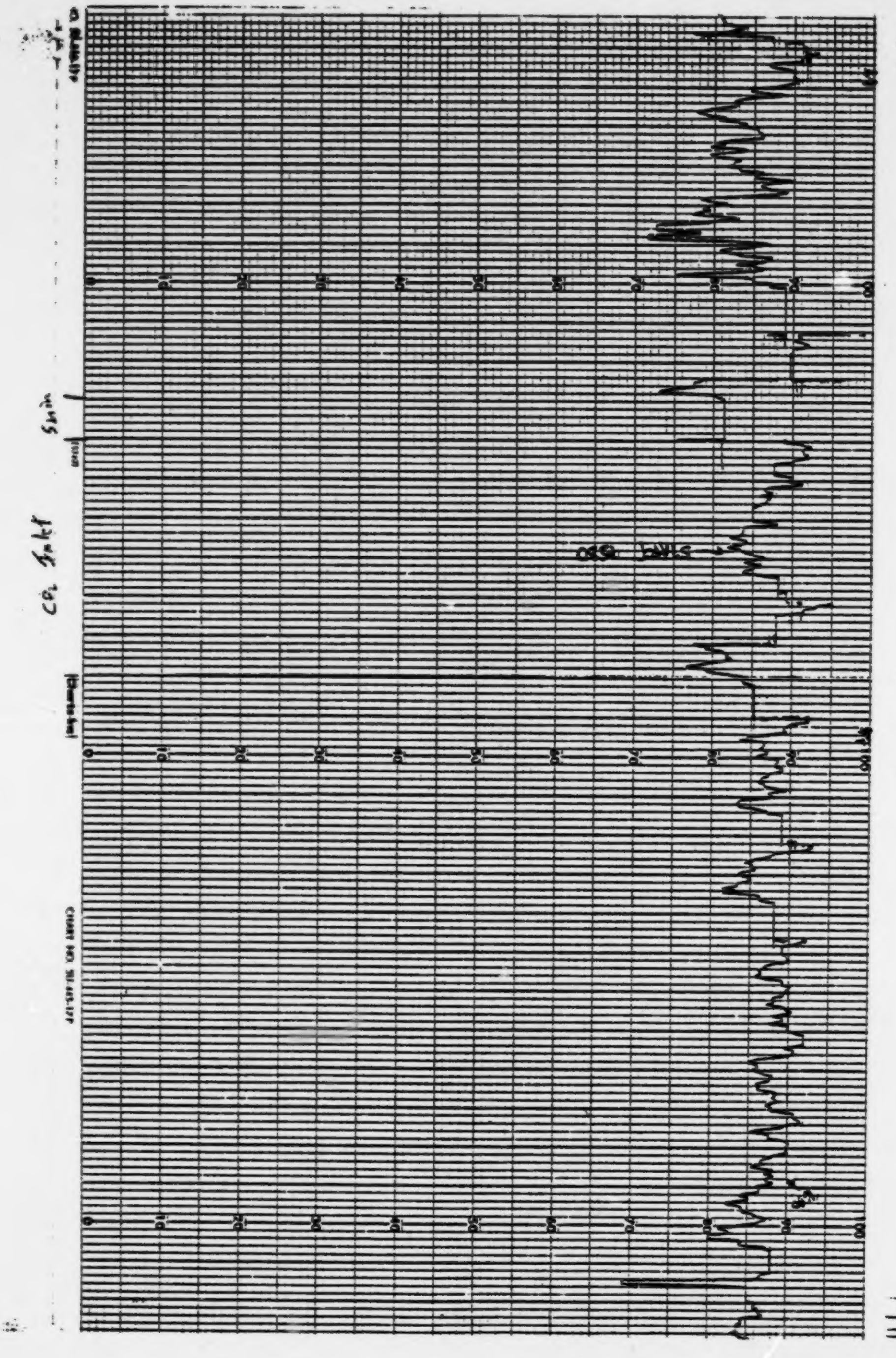

O2 Inlet
5 min
Baseline Span
Stack Off
100
90
80
70
60
50
40
30
20
10
0

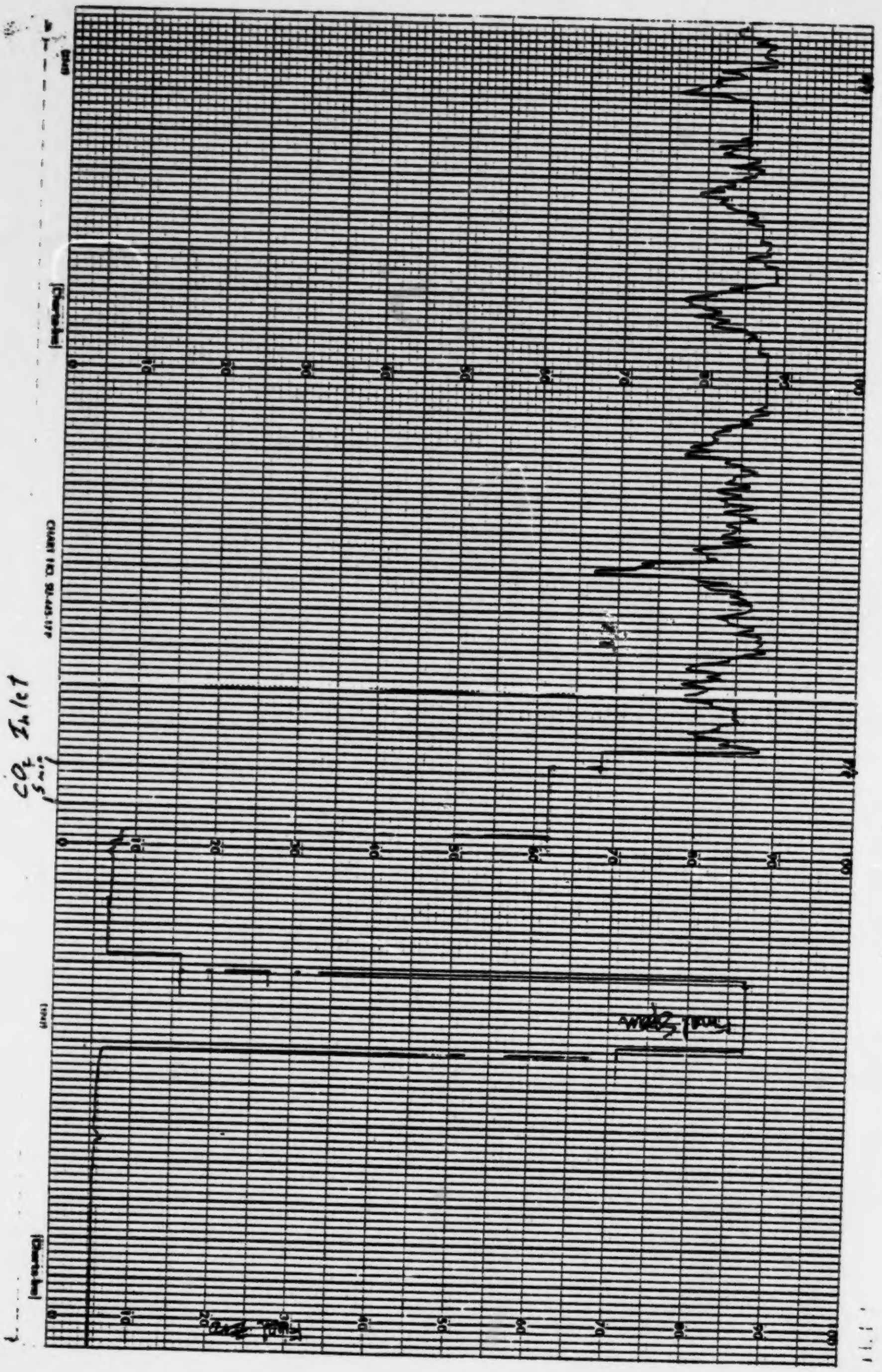

O2 Inlet
5 min
START 1630
100
90
80
70
60
50
40
30
20
10
0

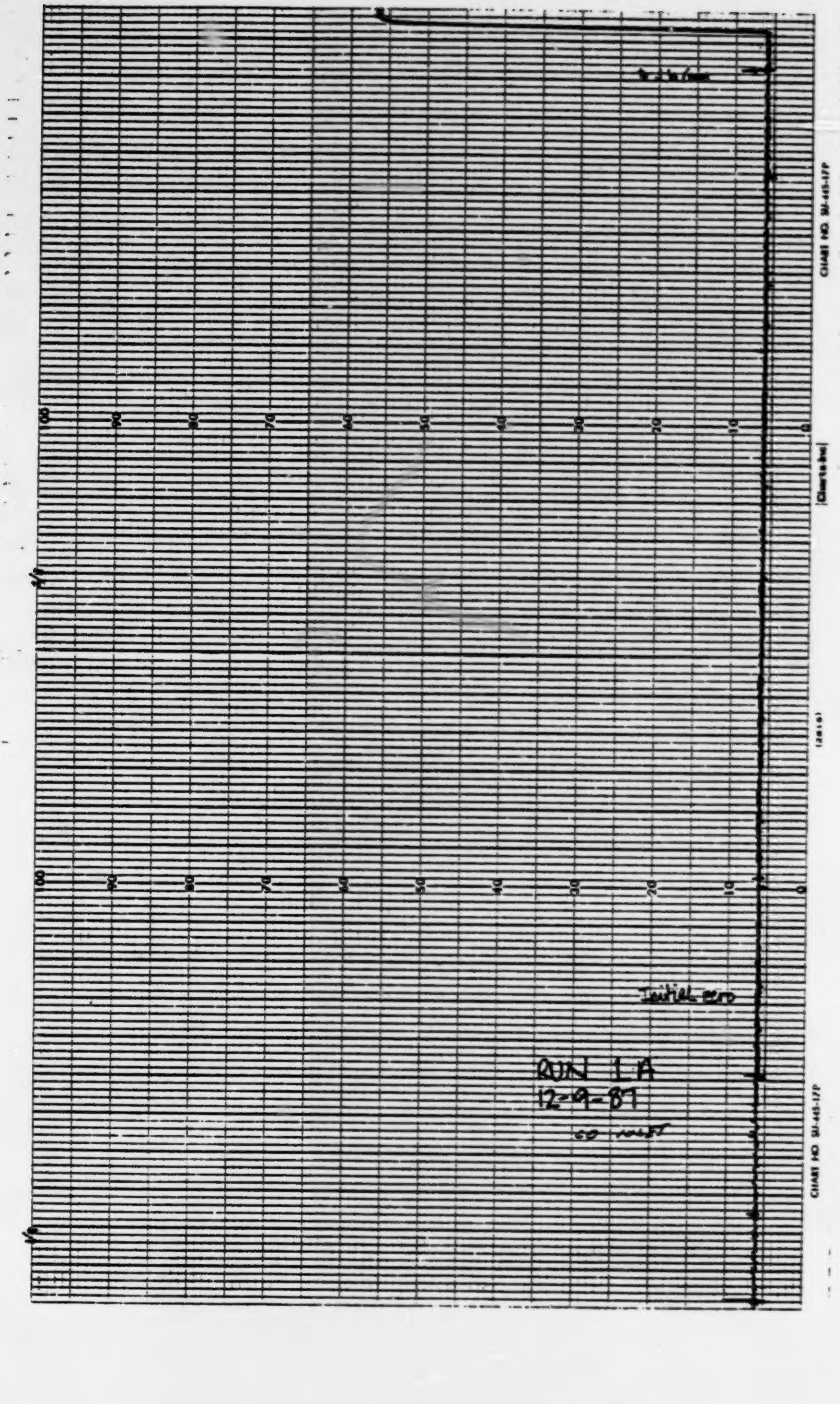

Final Zero
Final Span
O2 Inlet
5 min
100
90
80
70
60
50
40
30
20
10
0
CHART NO


Initial zero
RUN 1A
12-9-87
100
90
80
70
60
50
40
30
20
10
0

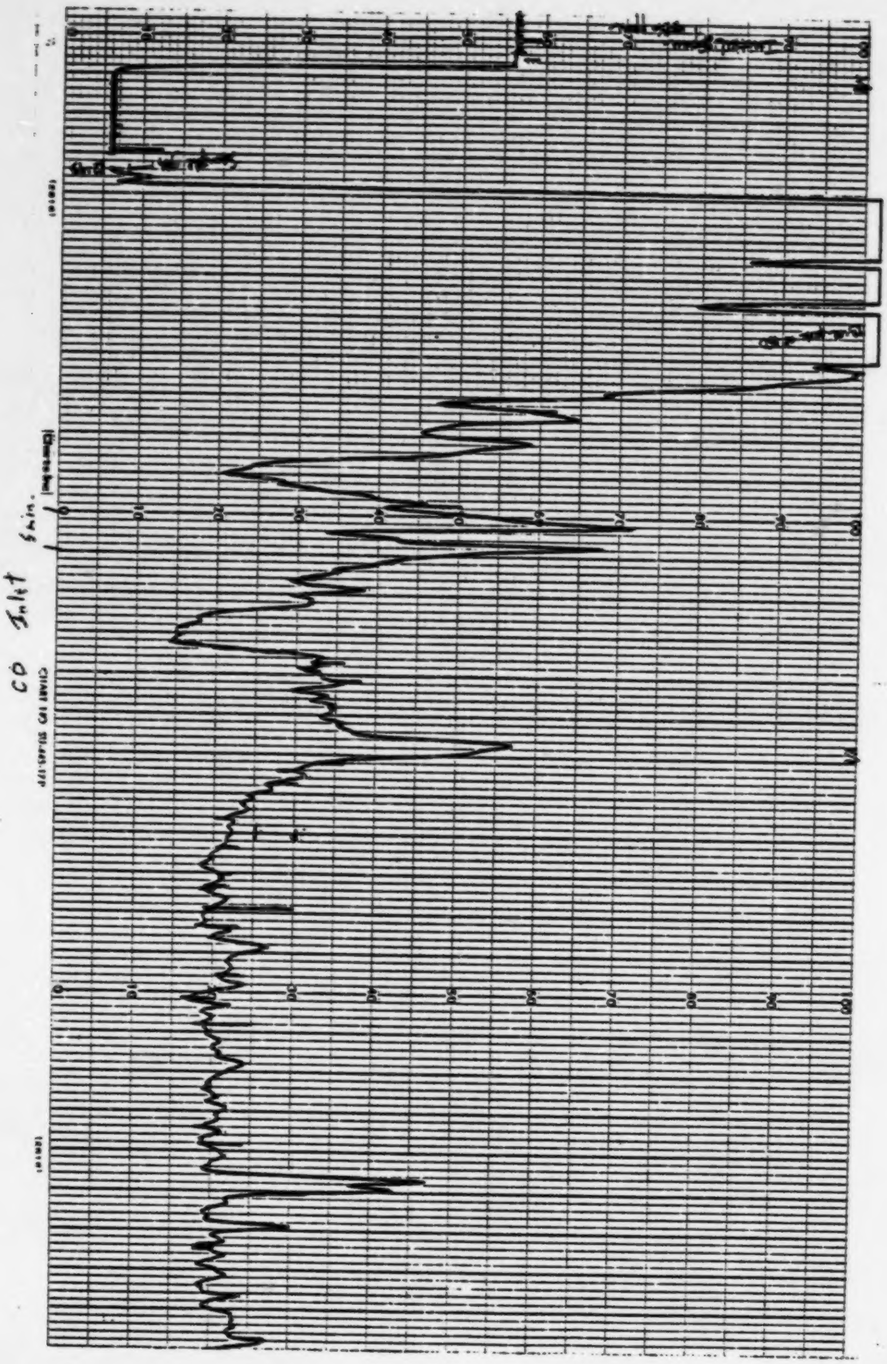

0
10
20
30
40
50
60
70
80
90
100
CHART NO.
CO₂
Span

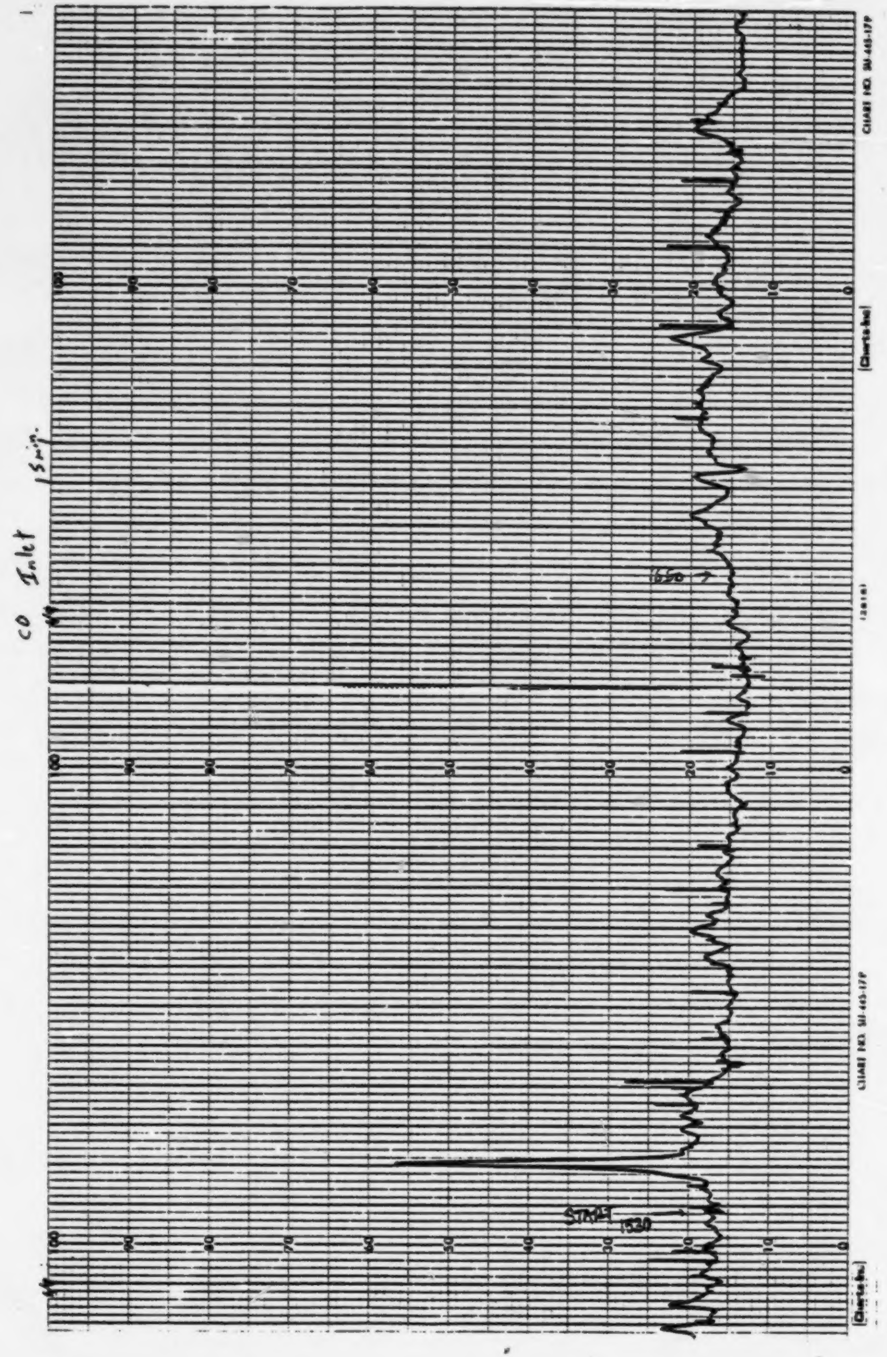

CO2 Inlet
5 min
START 1630
0
10
20
30
40
50
60
70
80
90
100
CHART NO.

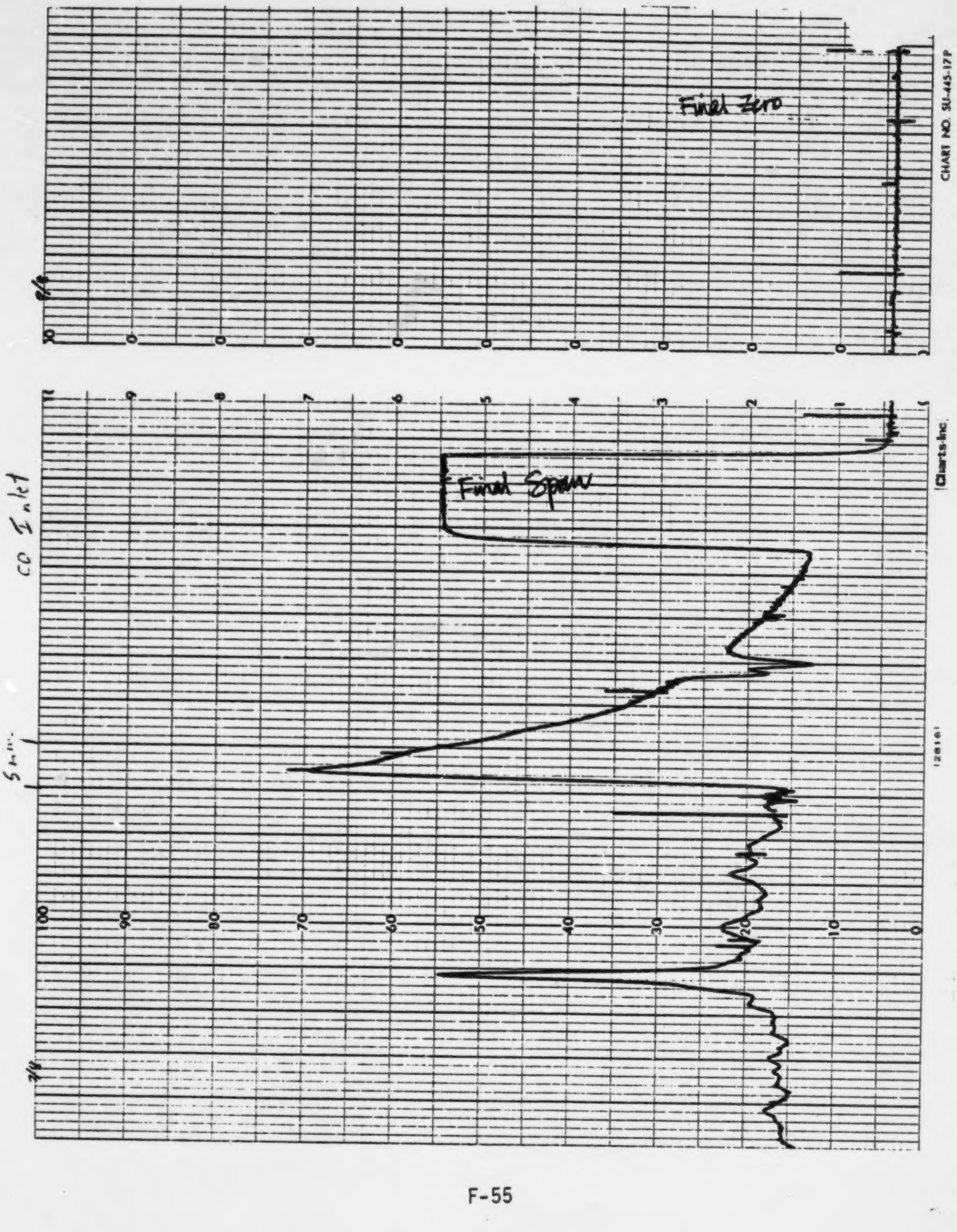

CO2 Inlet
5 min
Final Span
CHART NO. SU-445-17P
0
10
20
30
40
50
60
70
80
90
100

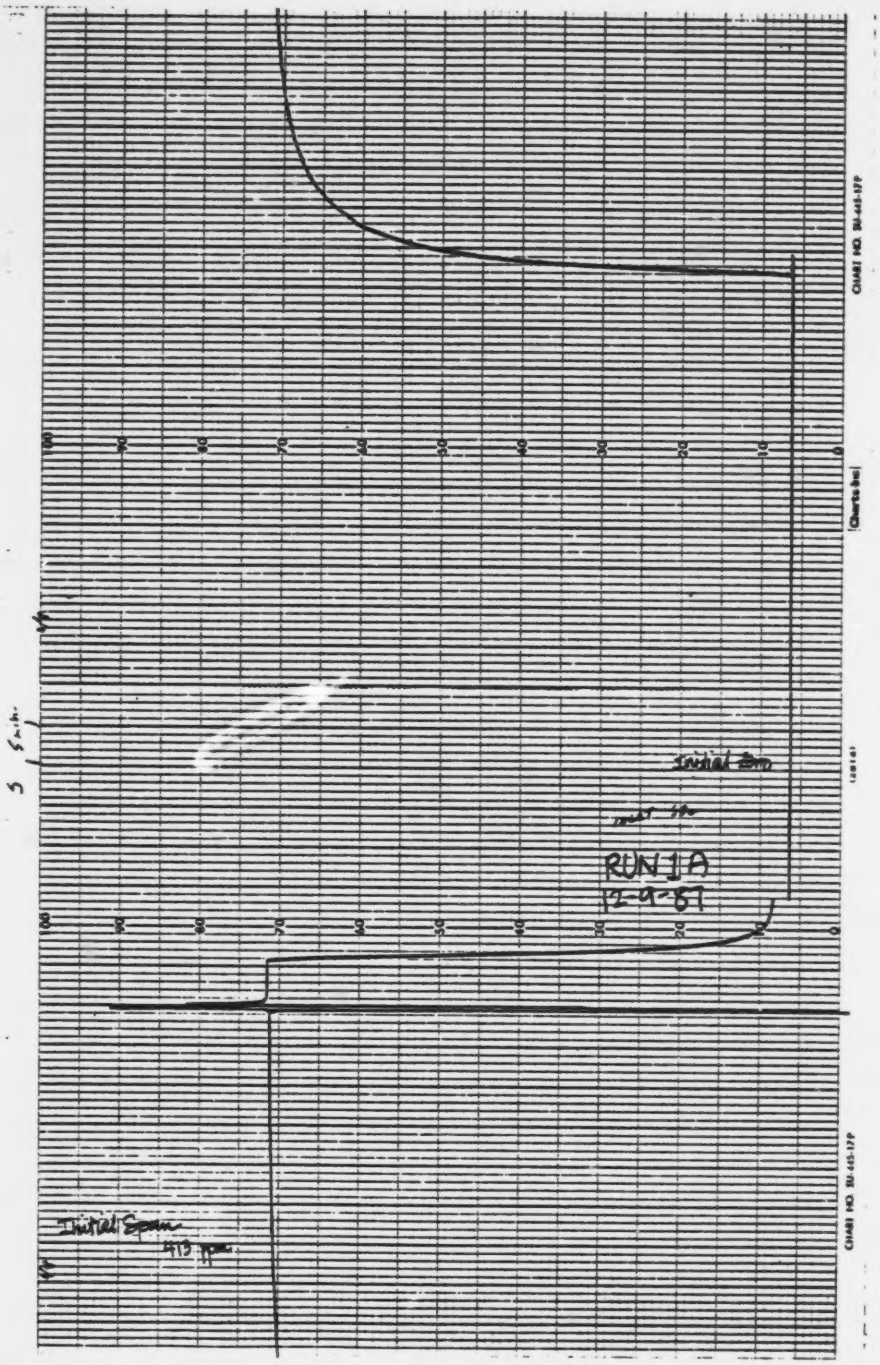


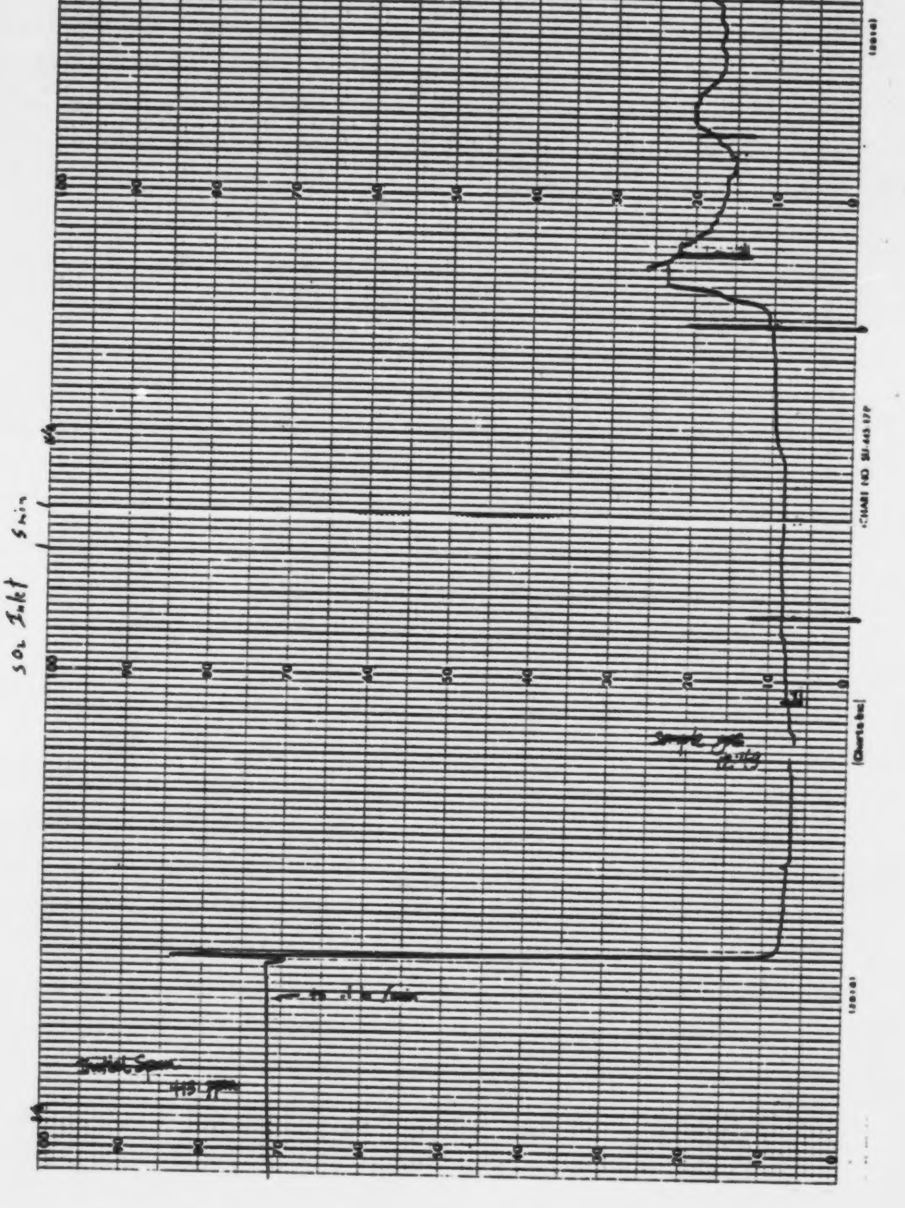
100
90
80
70
60
50
40
30
20
10
0
Chart No. SU-445-17P
Initial zero
RUN 1A
12-9-87
60 watt

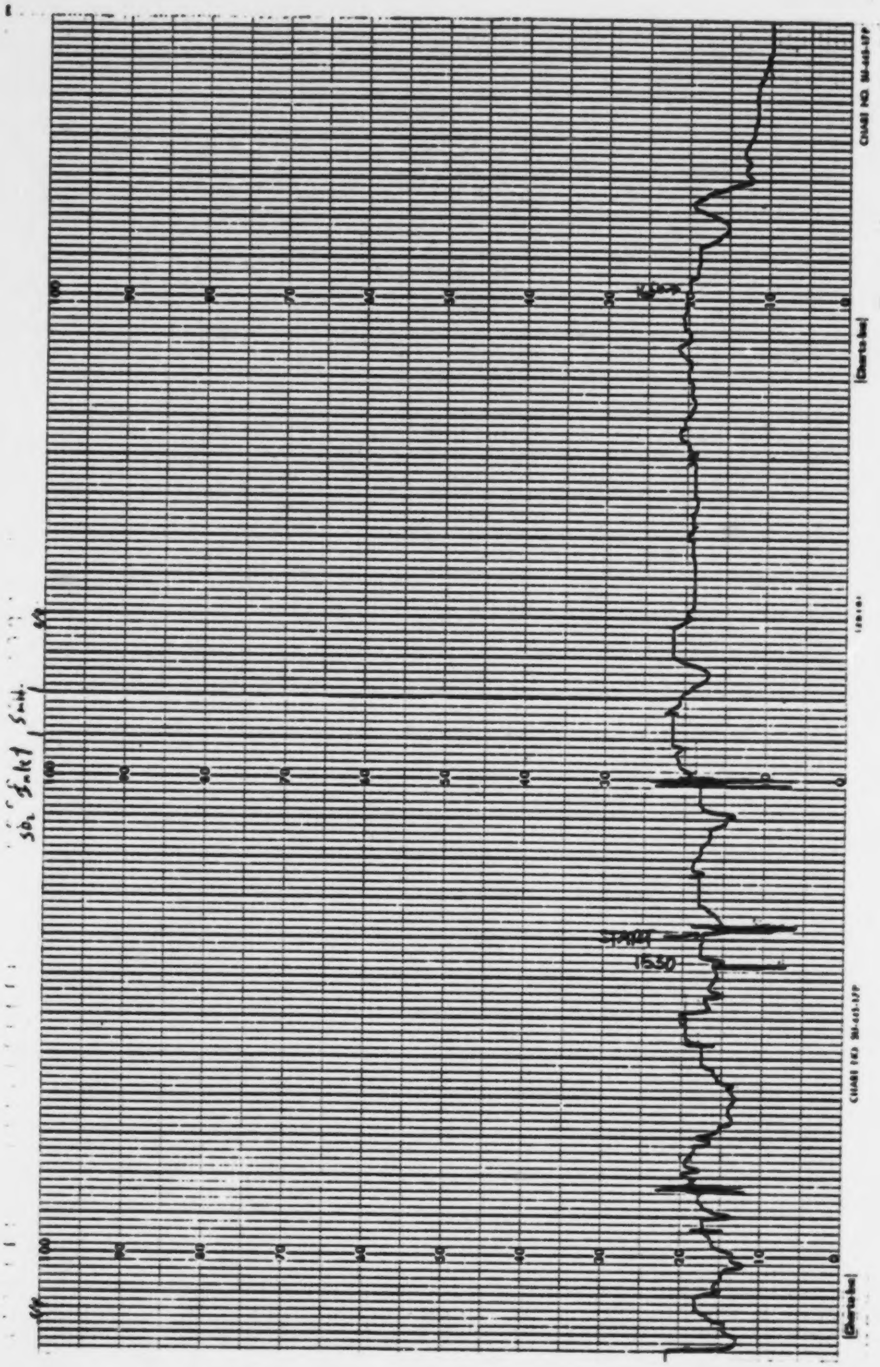

CO Inlet
5 min.
0
10
20
30
40
50
60
70
80
90
100

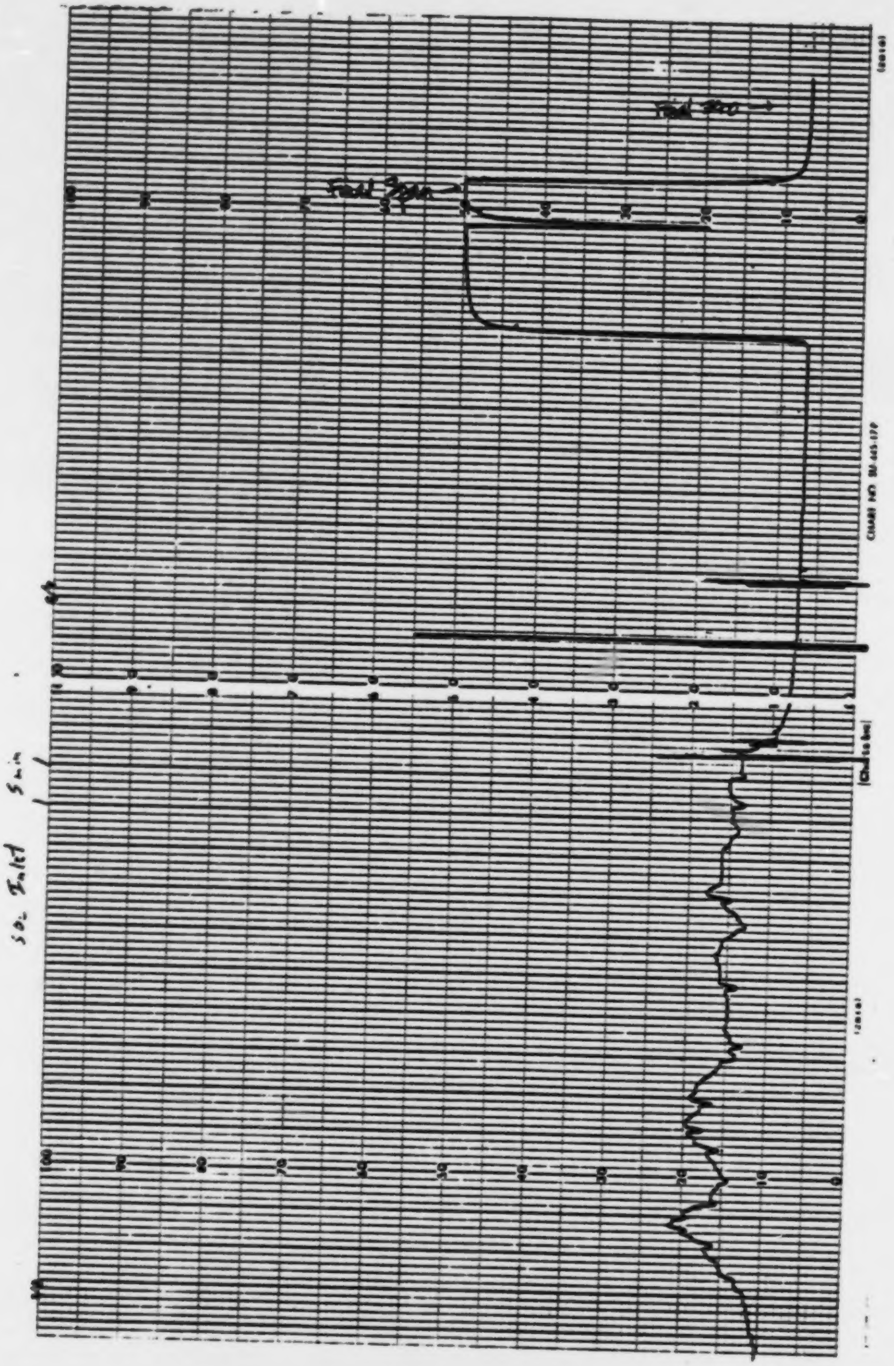

CO Inlet
15 min.
1650 →
START 1530
100
90
80
70
60
50
40
30
20
10
0
CHART NO. SH-445-17P
Charts Inc.


CO Inlet
Final Span
Final Zero
CHART NO. SU-445-17P
Charts-Inc
12816
100
90
80
70
60
50
40
30
20
10
0


100
90
80
70
60
50
40
30
20
10
0
CHART NO. SU-445-17P
Initial Zero
RUN 1A
12-9-87
Initial Span
413 ppm


SO2 Inlet
5 min
Initial Span
Sample gas
100
90
80
70
60
50
40
30
20
10
0
CHART NO

SO2 Inlet Span
START
1530
100
90
80
70
60
50
40
30
20
10
0


SO2 Inlet
Span
Final Span
Final Zero
100
90
80
70
60
50
40
30
20
10
0

MR1AIN

TIME	Decimal Time ↓	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)
1530	15.50	8.77	10.87	64.8	71.8
1531	15.52	8.98	11.50	63.1	58.4
1532	15.53	8.32	11.39	64.0	56.1
1533	15.55	8.15	11.22	64.2	62.9
1534	15.57	8.07	12.63	66.7	71.8
1535	15.58	6.51	13.92	67.1	88.1
1536	15.60	4.83	14.81	92.4	122.7
1537	15.62	3.92	13.95	229.6	118.4
1538	15.63	4.94	12.88	131.7	78.7
1539	15.65	6.40	11.28	83.9	80.2
1540	15.67	7.99	10.82	75.5	76.4
1541	15.68	8.87	10.49	78.3	72.8
1542	15.70	9.27	9.99	80.5	69.2
1543	15.72	9.81	10.28	80.0	66.0
1544	15.73	9.46	10.53	78.5	61.5
1545	15.75	9.49	9.73	79.1	51.6
1546	15.77	9.89	10.62	81.7	65.1
1547	15.78	9.10	11.47	70.2	76.5
1548	15.80	8.08	12.31	63.0	81.0
1549	15.82	7.25	12.04	53.7	81.2
1550	15.83	7.54	12.40	51.8	77.0
1551	15.85	6.87	13.15	54.7	86.4
1552	15.87	6.14	12.74	51.5	92.7
1553	15.88	6.62	12.23	53.9	93.8
1554	15.90	7.57	11.22	57.4	93.7
1555	15.92	8.03	11.73	57.3	108.3
1556	15.93	7.88	11.75	51.1	113.6
1557	15.95	7.71	12.21	52.3	118.3
1558	15.97	7.33	12.21	49.2	104.8
1559	15.98	7.39	11.73	48.3	94.2
1600	16.00	7.74	11.99	52.5	90.0
1601	16.02	7.45	12.03	51.1	82.2
1602	16.03	7.72	11.05	51.4	72.1
1603	16.05	8.45	11.61	63.5	69.9
1604	16.07	7.69	13.14	60.9	82.4
1605	16.08	6.09	13.27	54.6	97.0
1606	16.10	5.76	13.56	64.6	106.3
1607	16.12	5.54	13.38	71.5	105.8
1608	16.13	5.62	13.06	61.2	104.0
1609	16.15	6.37	11.80	63.0	91.6
1610	16.17	7.65	11.32	54.2	84.6
1611	16.18	8.16	11.16	53.3	81.9
1612	16.20	8.43	11.23	55.6	77.7
1613	16.22	8.64	10.73	55.9	70.6
1614	16.23	8.92	11.39	59.4	70.3
1615	16.25	8.14	12.27	54.1	75.6
1616	16.27	7.20	12.40	51.0	80.0
1617	16.28	6.97	12.56	53.9	81.2
1618	16.30	6.74	12.70	51.0	83.9
1619	16.32	6.52	12.95	49.2	85.1
1620	16.33	6.19	12.81	47.6	85.0
1621	16.35	6.56	12.44	47.2	81.0

MR1AIN

TIME	Decimal Time ↓	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)
1622	16.37	6.79	12.55	46.5	81.9
1623	16.38	6.95	11.80	45.9	79.9
1624	16.40	7.61	11.68	51.8	77.5
1625	16.42	7.66	12.44	53.2	81.4
1626	16.43	7.01	12.57	47.8	85.4
1627	16.45	6.92	12.18	51.3	82.3
1628	16.47	7.24	12.27	47.4	80.5
1629	16.48	6.97	12.47	45.8	84.4
1630	16.50	6.95	12.25	46.2	84.4
1631	16.52	7.02	12.63	44.1	85.5
1632	16.53	6.57	13.31	41.7	91.0
1633	16.55	5.96	12.84	50.2	92.8
1634	16.57	6.37	12.70	45.6	89.2
1635	16.58	6.84	11.62	39.8	85.8
1636	16.60	7.81	11.62	44.5	81.8
1637	16.62	7.91	12.00	42.2	82.4
1638	16.63	7.67	11.71	[illegible]	84.1
1639	16.65	7.88	12.04	42.2	84.6
1640	16.67	7.53	12.19	43.7	87.8
1641	16.68	7.40	12.01	43.1	84.9
1642	16.70	7.35	12.72	45.9	87.1
1643	16.72	6.63	12.87	43.1	93.8
1644	16.73	6.72	11.84	41.7	90.0
1645	16.75	7.47	12.21	51.7	85.3
1646	16.77	7.07	12.62	49.7	90.4
1647	16.78	6.81	12.35	48.1	91.8
1648	16.80	7.19	11.75	49.4	88.8
1649	16.82	7.72	11.83	53.7	87.8
1650	16.83	7.59	12.01	51.8	88.8
1651	16.85	7.54	11.85	51.6	86.0
1652	16.87	7.77	11.39	51.9	83.7
1653	16.88	8.22	11.01	55.4	79.7
1654	16.90	8.68	11.14	60.7	78.3
1655	16.92	8.45	11.67	62.7	78.9
1656	16.93	7.95	11.29	60.5	76.8
1657	16.95	8.54	10.57	64.1	65.3
1658	16.97	9.17	10.55	72.3	57.6
1659	16.98	8.91	11.66	77.1	58.3
1700	17.00	7.71	12.99	65.2	68.9
1701	17.02	6.15	13.38	56.9	82.3
1702	17.03				
1703	17.05				
1704	17.07				
1705	17.08				
1706	17.10	7.82	11.58	63.9	
1707	17.12	7.97	11.72	66.6	
1708	17.13	7.87	11.49	64.3	
1709	17.15	8.28	11.11	68.7	
1710	17.17	8.62	11.03	74.2	
1711	17.18	8.60	11.44	72.7	
1712	17.20	8.34	11.12	72.2	
1713	17.22	8.57	11.39	73.1	
1714	17.23	8.15	11.94	71.8	

MR1AIN

TIME		O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)
1715	17.25	7.68	11.84	71.7	
1716	17.27	7.62	12.22	66.4	
1717	17.28	7.33	11.24	60.9	
1718	17.30	8.29	10.98	67.6	
1719	17.32	8.78	10.25	69.7	
1720	17.33	9.59	9.65	76.6	
1721	17.35	9.83	11.19	90.3	
1722	17.37	8.24	12.89	67.0	
1723	17.38	6.64	13.08	53.5	
1724	17.40	6.06	12.96	58.5	
1725	17.42	6.45	12.03	55.7	
1726	17.43	7.41	11.31	54.5	
1727	17.45	8.16	10.88	60.1	
1728	17.47	8.67	11.14	63.2	
1729	17.48	8.25	11.31	60.4	
1730	17.50	8.16	11.68	57.7	
1731	17.52	8.00	11.00	56.0	
1732	17.53	8.53	10.66	58.3	
1733	17.55	9.10	10.24	63.9	
1734	17.57	9.29	10.67	67.6	
1735	17.58	8.97	11.28	62.7	
1736	17.60	8.29	11.47	58.1	
1737	17.62	7.98	12.35	55.7	
1738	17.63	7.07	12.17	49.8	
1739	17.65	7.30	12.11	51.9	
1740	17.67	7.33	12.01	53.3	
1741	17.68	7.53	11.67	51.3	
1742	17.70	7.50	12.45	51.6	
1743	17.72	6.65	13.23	47.6	
1744	17.73	6.00	12.09	49.3	
1745	17.75	7.50	10.73	53.9	
1746	17.77	9.06	9.68	60.5	
1747	17.78	9.96	10.07	75.4	
1748	17.80	9.62	10.30	75.3	
1749	17.82	9.39	10.60	69.2	
1750	17.83	9.00	11.44	62.2	
1751	17.85	8.18	11.87	57.7	
1752	17.87	7.47	11.99	51.3	
1753	17.88	7.36	12.46	44.7	
1754	17.90	6.49	13.15	45.9	
1755	17.92	5.74	13.46	45.3	
1756	17.93	5.44	13.17	45.8	
1757	17.95	5.89	12.57	45.2	
1758	17.97	6.51	12.41	47.0	
1759	17.98	6.61	12.40	45.9	
1800	18.00	6.98	12.03	50.4	
1801	18.02	7.25	11.48	48.1	
1802	18.03	7.87	11.03	47.1	
1803	18.05	8.59	10.51	53.2	
1804	18.07	9.05	10.37	56.1	
1805	18.08	9.44	10.03	57.0	
1806	18.10	9.70	10.49	61.2	
1807	18.12	8.93	11.25	62.0	

MR1AIN

TIME		O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)
1808	18.13	8.13	11.59	54.2	
1809	18.15	8.20	11.12	53.9	
1810	18.17	8.36	10.93	57.5	
1811	18.18	8.58	11.00	59.3	
1812	18.20	8.62	11.38	59.7	
1813	18.22	8.28	11.26	60.1	
1814	18.23	8.09	11.30	54.9	
1815	18.25	8.39	11.21	57.0	
1816	18.27	8.51	11.19	60.6	
1817	18.28	8.36	10.92	61.2	
1818	18.30	9.05	10.32	68.1	
1819	18.32	9.31	9.82	76.4	
1820	18.33	10.53	8.13	93.4	
1821	18.35	11.93	8.89	177.3	
1822	18.37	10.26	10.57	212.9	
1823	18.38	9.13	11.28	98.0	
1824	18.40	8.37	11.54	82.1	
1825	18.42	7.76	11.87	77.0	
1826	18.43	8.00	10.97	78.6	
1827	18.45	8.36	11.58	92.2	
1828	18.47	7.80	11.63	85.9	
1829	18.48	7.50	12.08	73.9	
1830	18.50	7.26	12.05	69.9	
1831	18.52	7.42	11.29	68.7	
1832	18.53	8.35	10.25	71.6	
1833	18.55	9.40	10.48	82.3	
1834	18.57	9.13	10.34	81.2	
1835	18.58	9.51	10.35	75.0	
1836	18.60	9.51	10.14	77.8	
1837	18.62	9.36	11.00	75.0	
1838	18.63	8.49	11.29	65.7	
1839	18.65	8.23	11.11	59.0	
1840	18.67	8.63	10.41	66.0	
1841	18.68	9.15	10.83	65.5	
1842	18.70	8.70	11.67	61.8	
Average=		7.85	11.65	62.76	83.25
Min=		3.92	8.13	39.80	51.60
Max=		11.93	14.81	229.60	122.70
Std Dev=		1.16	.98	22.66	13.35
Variance=		1.34	.97	513.32	178.27

```
RUN 01A MERC
12/09/87
MIDPOINT MERC
8910-L-02-12
GWS
11:10
 0  O2    0.41
 1 CO2    1.20
11:11
 0  O2    0.46
 1 CO2    1.21
11:12
 0  O2    0.42
 1 CO2    1.19
11:13
 0  O2    0.36
 1 CO2    1.21
11:14
 0  O2    0.42
 1 CO2    1.21
11:14              IN ZERO
 0  O2    0.42
 1 CO2    1.21
12:10
 0  O2   55.03
 1 CO2    2.19
12:11
 0  O2   54.90
 1 CO2    1.62
12:12
 0  O2   54.86
 1 CO2    1.42
12:13
 0  O2   54.79
 1 CO2    1.35
12:13              IN SPAN
 0  O2   54.79        14.01
12:16
 0  O2   18.30
 1 CO2   72.46
12:17
 0  O2   17.09
 1 CO2   76.95
12:18
 0  O2   16.82
 1 CO2   77.67
12:19
 0  O2   16.76
 1 CO2   77.91
12:20
 0  O2   16.70
 1 CO2   77.92
12:21
 0  O2   16.59
 1 CO2   77.92
12:21              IN SPAN
 1 CO2   77.92        12.00
   1 14:43
  70.39   5.53
  18.03   0.24
   2 14:44
  70.73   5.13
  18.12   0.22
   3 14:45
  70.92   5.05
  18.16   0.22
   4 14:46
  71.12   5.02
  18.22   0.22
   5 14:47
  71.32   5.09
  18.27   0.22
   6 14:48
  71.59   5.13
  18.34   0.22
   7 14:49
  71.77   5.19
  18.30   0.23
   8 14:50
  71.94   5.34
  18.43   0.23
   9 14:51
  72.13   5.39
  18.40   0.24
  10 14:52
  72.30   5.44
  18.52   0.24
```

Ini lk chk ok

```
 11 14:53
72.54   5.50
18.50   0.24
 12 14:54
72.69   5.57
18.62   0.25
 13 14:55
72.92   5.61
18.68   0.25
 14 14:56
73.07   5.65
18.72   0.25
 15 14:57
71.69   5.32
18.36   0.23
 16 14:58
69.71   4.86
17.85   0.21
 17 14:59
70.25   5.09
17.99   0.22
 18 15:00
73.87   4.90
18.93   0.21
 19 15:01
72.28   4.67
18.52   0.20
 20 15:02
70.76   4.62
18.12   0.20
 21 15:03
67.79   4.80
17.36   0.21
 22 15:04
66.32   4.70
16.98   0.20
 23 15:05
66.94   5.04
17.12   0.22
 24 15:14
30.40 76.57
 7.72 11.64
 25 15:15
26.17 77.40
 6.64 11.86
 26 15:16
25.39 78.17
 6.44 12.07
 27 15:17
26.20 78.37
 6.66 12.12
 28 15:18
24.50 78.56
 6.23 12.18
 29 15:19
25.30 78.70
 6.41 12.21
 30 15:20
29.74 78.40
 7.56 12.13
 31 15:21
28.73 78.09
 7.30 12.05
 32 15:22
27.12 78.15
 6.88 12.06
 33 15:23
28.79 78.23
 7.31 12.09
 34 15:24
29.62 77.98
 7.52 12.02
 35 15:25
29.80 77.76
 7.57 11.96
 36 15:26
31.69 77.50
 8.06 11.89
 37 15:27
29.58 77.14
 7.51 11.79
 38 15:28
29.33 77.22
 7.43 11.81
 39 15:29
```

out of flow adjust range.

```
33.19 73.80
 8.44 10.90
 40 15:30
30.84 76.96
 7.84 11.74
 41 15:31
31.65 76.82
 8.05 11.70
 42 15:32
31.89 72.80
 8.11 10.67
 43 15:33
29.54 77.11
 7.50 11.70
 44 15:34
30.36 71.20
 7.72 10.24
 45 15:35
25.46 77.45
 6.45 11.87
 46 15:36
21.40 65.20
 5.43  8.70
 47 15:37
15.02 78.97
 3.76 12.29
 48 15:38
20.18 77.47
 5.09 11.88
 49 15:39
23.32 79.20
 5.90 12.37
 50 15:40
26.30 74.39
 6.69 11.06
 51 15:41
32.13 79.10
 8.17 12.32
 52 15:42
32.24 78.86
 8.20 12.26
 53 15:43
33.59 73.55
 8.55 10.84
 54 15:44
35.04 71.56
 8.92 10.33
 55 15:45
32.30 76.85
 8.22 11.71
 56 15:46
34.94 72.63
 8.90 10.60
 57 15:47
33.41 70.82
 8.50 10.14
 58 15:48
30.23 78.67
 7.68 12.21
 59 15:49
32.03 68.50
 8.14  9.57
 60 15:50
30.79 75.40
 7.83 11.32
 61 15:51
26.52 78.49
 6.72 12.16
 62 15:52
37.60 62.89
 9.50  8.25
 63 15:53
36.13 73.07
 9.20 10.72
 64 15:54
34.68 76.56
 8.83 11.63
 65 15:55
33.26 76.84
 8.46 11.49
 66 15:56
35.73 78.62
 9.10 12.19
 67 15:57
38.33 78.56
```

START @1530

```
 9.77 12.17
 68 15:58
39.75 78.63
10.13 12.19
 69 15:59
36.63 78.56
 9.33 12.18
 70 16:00
39.00 78.64
 9.94 12.20
 71 16:01
38.27 78.60
 9.75 12.19
 72 16:02
39.79 78.50
10.14 12.18
 73 16:03
40.10 78.61
10.22 12.19
 74 16:04
42.02 78.54
10.72 12.17
 75 16:05
41.24 78.53
10.52 12.17
 76 16:06
65.00 71.30
16.66 10.20
 77 16:07
67.33 61.73
17.24  7.99
 78 16:08
68.10 40.01
17.46  3.90
 79 16:09
31.49 68.71
 8.01  9.62
 80 16:10
33.08 74.72
 8.42 11.14
 81 16:11
30.45 73.56
 7.74 10.84
 82 16:12
34.30 69.21
 8.75  9.74
 83 16:13
30.91 76.64
 7.86 11.65
 84 16:14
26.03 77.43
 6.60 11.87
 85 16:15
27.20 78.24
 6.90 12.09
 86 16:16
25.90 78.32
 6.59 12.11
 87 16:17
24.20 78.41
 6.15 12.14
 88 16:18
22.45 78.72
 5.60 12.22
 89 16:19
24.40 78.75
 6.20 12.23
 90 16:20
26.80 78.33
 6.82 12.11
 91 16:21
25.06 78.53
 6.35 12.17
 92 16:22
25.57 78.06
 6.40 12.04
 93 16:23
26.46 76.63
 6.71 11.65
 94 16:24
29.82 77.76
 7.58 11.96
 95 16:25
25.30 78.39
```

zero flow

main valve plugged

```
6.41 12.13
96 16:26
26.99 78.28
6.85 12.10
97 16:27
28.93 78.94
7.35 10.17
98 16:28
25.72 78.47
6.52 12.15
99 16:29
26.05 75.52
6.60 11.36
100 16:30
25.33 78.40
6.42 12.13
101 16:31
23.23 78.86
5.88 12.26
102 16:32
24.44 78.93
6.19 12.28
103 16:33
25.83 78.63
6.55 12.19
104 16:34
30.41 78.19
7.73 12.07
105 16:35
29.94 77.64
7.61 11.92
106 16:36
29.74 77.83
7.56 11.98
107 16:37
28.08 77.87
7.13 11.99
108 16:38
29.07 77.81
7.38 11.97
109 16:39
26.53 78.13
6.73 12.06
110 16:40
27.97 77.99
7.10 12.02
111 16:41
24.74 78.37
6.27 12.12
112 16:42
24.96 78.72
6.32 12.22
113 16:43
26.65 78.20
6.76 12.08
114 16:44
25.11 71.79
6.36 10.39
115 16:45
21.95 74.32
5.55 11.04
116 16:46
24.47 74.78
6.20 11.16
117 16:47
26.82 77.91
6.80 12.00
118 16:48
27.29 75.79
6.92 11.43
119 16:49
23.75 77.97
6.01 12.01
120 16:50
28.71 77.85
7.29 11.98
121 16:51
33.30 74.09
8.47 10.98
122 16:52
31.60 75.18
8.03 11.27
123 16:53
33.01 75.72
8.40 11.73
```

```
124 16:54
27.85 77.44
7.07 11.87
125 16:55
27.91 77.52
7.09 11.89
126 16:56
32.17 73.84
8.18 10.92
127 16:57
31.75 73.36
8.07 10.79
128 16:58
29.52 77.25
7.50 11.82
129 16:59
24.82 76.62
6.29 11.65
130 17:00
19.78 79.85
4.99 12.31
131 17:01
26.21 78.75
6.65 12.23
132 17:02
26.12 77.94
6.62 12.00
133 17:03
25.92 77.59
6.57 11.91
134 17:04
25.15 77.87
6.37 11.99
135 17:05
28.51 75.33
7.24 11.38
136 17:06
28.95 77.44
7.35 11.87
137 17:07
30.70 77.42
7.82 11.86
138 17:08
31.58 77.06
8.01 11.77
139 17:09
35.06 76.68
8.92 11.67
140 17:10
30.57 76.95
7.77 11.74
141 17:11
33.28 77.06
8.47 11.77
142 17:12
30.86 74.57
7.84 11.10
143 17:13
28.12 77.54
7.14 11.90
144 17:14
27.83 77.84
7.06 11.98
145 17:15
27.16 77.79
6.89 11.96
146 17:16
24.31 78.02
6.16 12.03
147 17:17
31.54 77.12
8.02 11.78
148 17:18
31.79 76.72
8.08 11.68
149 17:19
33.27 73.50
8.46 10.83
150 17:20
32.63 71.01
8.30 10.19
151 17:21
26.76 77.19
5.79 11.80
152 17:22
```

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24.72 78.45
6.26 12.15
153 17:23
23.78 78.72
6.02 12.22
154 17:24
23.75 74.05
6.01 10.97
155 17:25
29.55 71.31
7.51 10.27
156 17:26
28.22 75.35
7.16 11.31
157 17:27
30.70 77.07
7.80 11.77
158 17:28
30.38 77.13
7.72 11.79
159 17:29
31.27 72.12
7.95 10.47
160 17:30
26.59 75.26
6.74 11.29
161 17:31
29.47 77.16
7.49 11.80
162 17:32
33.97 76.62
8.65 11.65
163 17:33
30.88 76.28
7.85 11.56
164 17:34
32.04 76.60
8.15 11.64
165 17:35
31.10 77.20
7.91 11.91
166 17:36
30.95 77.51
7.87 11.89
167 17:37
27.82 78.17
7.06 12.07
168 17:38
26.05 75.57
6.60 11.37
169 17:39
25.87 78.12
6.56 12.06
170 17:40
25.95 77.99
6.58 12.02
171 17:41
26.27 77.83
6.66 11.98
172 17:42
25.23 78.37
6.39 12.12
173 17:43
18.31 78.96
4.61 12.29
174 17:44
28.54 78.01
7.25 12.02
175 17:45
32.70 76.94
8.32 11.74
176 17:46
39.53 70.56
10.08 10.08
177 17:47
34.13 76.17
8.69 11.53
178 17:48
32.20 76.23
8.19 11.54
179 17:49
31.40 76.60
7.98 11.64
180 17:50
```

```
7.74 11.85
181 17:51
27.69 74.16
7.03 11.08
182 17:52
26.46 72.53
6.71 10.58
183 17:53
21.91 76.72
5.54 11.68
184 17:54
21.91 79.04
5.54 12.31
185 17:55
20.42 76.48
5.16 11.61
186 17:56
22.57 78.95
5.71 12.28
187 17:57
25.07 78.56
6.35 12.17
188 17:58
24.56 78.50
6.22 12.16
189 17:59
27.79 78.23
7.05 12.08
190 18:00
25.54 77.95
6.47 12.01
191 18:01
29.58 77.58
7.51 11.91
192 18:02
32.79 76.99
8.34 11.75
193 18:03
33.47 76.58
8.52 11.64
194 18:04
38.37 67.84
9.78 9.41
195 18:05
36.81 76.06
9.38 11.50
196 18:06
30.38 76.71
7.72 11.67
197 18:07
30.96 77.27
7.87 11.82
198 18:08
31.40 77.29
7.98 11.83
199 18:09
31.41 77.16
7.99 11.79
200 18:10
33.27 76.95
8.46 11.74
201 18:11
33.56 76.98
8.54 11.74
202 18:12
30.62 77.25
7.78 11.82
203 18:13
28.79 77.53
7.31 11.89
204 18:14
31.62 74.51
8.04 11.09
205 18:15
32.32 77.15
8.22 11.79
206 18:16
30.43 77.28
7.73 11.83
207 18:17
32.28 55.31
8.21 6.62
209 18:19
30.18 76.45
```

```
 7.67 11.60
209 18:19
41.36 75.12
10.55 11.25
210 18:20
44.86 72.41
11.45 10.55
211 18:21
34.52 75.40
 8.79 11.32
212 18:22
32.21 76.63
 8.19 11.65
213 18:23
31.20 75.17
 7.93 11.26
214 18:24
26.24 77.80
 6.65 11.97
215 18:25
29.61 77.44
 7.52 11.87
216 18:26
30.36 77.14
 7.72 11.79
217 18:27
26.40 77.66
 6.70 11.93
218 18:28
26.72 77.87
 6.78 11.99
219 18:29
25.59 78.02
 6.49 12.03
220 18:30
26.06 77.94
 6.61 12.01
221 18:31
30.29 77.06
 7.70 11.77
222 18:32
32.71 76.08
 8.32 11.51
223 18:33
31.20 76.62
 7.95 11.65
224 18:34
34.43 76.08
 8.76 11.50
225 18:35
34.69 76.09
 8.83 11.51
226 18:36
32.14 68.91
 8.17  9.67
227 18:37
30.35 77.12
 7.71 11.78
228 18:38
31.48 77.31
 8.00 11.83
229 18:39
33.38 76.93
 8.49 11.73
230 18:40
33.73 72.64
 8.58 10.61
231 18:41
33.23 75.35
 8.45 11.31
232 18:42
34.10 76.47
 8.68 11.61
233 18:43
60.02 64.39
15.36  9.59
234 18:44
68.46 48.85
17.53  5.37
235 18:45
70.79 38.36
18.13  3.68
236 18:46
71.59 31.28
18.34  2.40
```

```
237 18:47
71.92 26.15
18.42  1.97
238 18:48
72.00 22.07
18.44  1.53
239 18:49
71.88 19.26
18.41  1.25
240 18:50
71.74 17.21
18.38  1.06
241 18:51
71.61 15.56
18.34  0.92
242 18:52
71.49 14.22
18.31  0.81
243 18:53
71.38 13.12
18.28  0.73
244 18:54
71.38 12.24
18.28  0.66
245 18:55
71.37 11.31
18.28  0.60
246 18:56
71.47 10.61
18.31  0.55
247 18:57
71.58 10.05
18.34  0.51
19:11
 0  02    2.42
 1 CO2    3.22
19:12
 0  02    1.83
 1 CO2    2.42
19:13
 0  02    0.87
 1 CO2    2.14
19:14
 0  02    0.81
 1 CO2    2.05
19:15
 0  02    0.75
 1 CO2    2.03
19:16
 0  02    0.67
 1 CO2    1.89
19:17
 0  02    0.59
 1 CO2    1.80
19:18
 0  02    0.55
 1 CO2    1.75
19:19
 0  02    0.59
 1 CO2    1.70
19:19              FIN ZERO
 0  02    0.59
 1 CO2    1.70
20:07
 0  02   54.26
 1 CO2    2.46
20:08
 0  02   54.28
 1 CO2    2.00
20:09
 0  02   54.36
 1 CO2    1.82
20:10
 0  02   54.38
 1 CO2    1.70
20:11
 0  02   54.40
 1 CO2    1.66
20:12
 0  02   54.50
 1 CO2    1.61
20:13
 0  02   54.40
 1 CO2    1.61
20:13             FIN SPAN
 0  02   54.40      14.01
20:16
 0  02   18.35
 1 CO2   75.39
20:17
 0  02   16.77
 1 CO2   77.41
20:18
 0  02   16.56
 1 CO2   77.71
20:19
 0  02   16.51
 1 CO2   77.82
20:20
 0  02   16.46
 1 CO2   77.87
20:21
 0  02   16.48
 1 CO2   77.91
20:22
 0  02   16.48
 1 CO2   77.93
20:22             FIN SPAN
 1 CO2   77.93      12.30
```

FINAL LK CHK OK

MR1AMID

Time		O2 (%)	CO2 (%)
1530	15.50	7.85	11.74
1531	15.52	8.06	11.70
1532	15.53	8.12	10.66
1533	15.55	7.52	11.78
1534	15.57	7.73	10.23
1535	15.58	6.46	11.87
1536	15.60	5.43	8.77
1537	15.62	3.76	12.29
1538	15.63	5.09	11.88
1539	15.65	5.91	12.37
1540	15.67	6.70	11.05
1541	15.68	8.19	12.32
1542	15.70	8.21	12.26
1543	15.72	8.56	10.83
1544	15.73	8.94	10.32
1545	15.75	8.23	11.71
1546	15.77	8.91	10.60
1547	15.78	8.52	10.14
1548	15.80	7.69	12.20
1549	15.82	8.16	9.56
1550	15.83	7.84	11.32
1551	15.85	6.73	12.15
1552	15.87	9.60	8.24
1553	15.88	9.22	10.71
1554	15.90	8.85	11.63
1555	15.92	8.48	11.49
1556	15.93	9.12	12.19
1557	15.95		
1609	16.15		
1610	16.17	8.43	11.14
1611	16.18	7.75	10.84
1612	16.20	8.77	9.73
1613	16.22	7.87	11.65
1614	16.23	6.61	11.87
1615	16.25	6.91	12.09
1616	16.27	6.59	12.11
1617	16.28	6.15	12.13
1618	16.30	5.68	12.22
1619	16.32	6.21	12.23
1620	16.33	6.83	12.11
1621	16.35	6.36	12.17
1622	16.37	6.49	12.04
1623	16.38	6.72	11.65
1624	16.40	7.59	11.95
1625	16.42	6.42	12.13
1626	16.43	6.86	12.10
1627	16.45	7.36	10.17
1628	16.47	6.53	12.15
1629	16.48	6.61	11.35
1630	16.50	6.43	12.13
1631	16.52	5.88	12.26
1632	16.53	6.20	12.28

MR1AMID

Time		O2 (%)	CO2 (%)
1633	16.55	6.56	12.19
1634	16.57	7.74	12.07
1635	16.58	7.62	11.92
1636	16.60	7.57	11.97
1637	16.62	7.14	11.98
1638	16.63	7.39	11.97
1639	16.65	6.74	12.06
1640	16.67	7.11	12.02
1641	16.68	6.27	12.12
1642	16.70	6.33	12.22
1643	16.72	6.77	12.08
1644	16.73	6.37	10.38
1645	16.75	5.55	11.03
1646	16.77	6.20	11.16
1647	16.78	6.81	12.00
1648	16.80	6.93	11.42
1649	16.82	6.02	12.01
1650	16.83	7.30	11.98
1651	16.85	8.49	10.97
1652	16.87	8.05	11.26
1653	16.88	8.41	11.73
1654	16.90	7.03	11.87
1655	16.92	7.09	11.89
1656	16.93	8.20	10.91
1657	16.95	8.09	10.78
1658	16.97	7.51	11.82
1659	16.98	6.29	11.65
1700	17.00	4.99	12.31
1701	17.02	6.65	12.23
1702	17.03	6.63	12.00
1703	17.05	6.58	11.91
1704	17.07	6.38	11.98
1705	17.08	7.25	11.30
1706	17.10	7.36	11.87
1707	17.12	7.84	11.86
1708	17.13	8.02	11.76
1709	17.15	8.94	11.66
1710	17.17	7.78	11.74
1711	17.18	8.48	11.76
1712	17.20	7.86	11.10
1713	17.22	7.15	11.90
1714	17.23	7.07	11.98
1715	17.25	6.90	11.96
1716	17.27	6.16	12.03
1717	17.28	8.03	11.78
1718	17.30	8.10	11.67
1719	17.32	8.48	10.82
1720	17.33	8.31	10.18
1721	17.35	6.80	11.80
1722	17.37	6.27	12.14
1723	17.38	6.02	12.22
1724	17.40	6.02	10.96
1725	17.42	7.52	10.26

MR1AMID

Time		O2 (%)	CO2 (%)
1726	17.43	7.17	11.31
1727	17.45	7.82	11.77
1728	17.47	7.73	11.78
1729	17.48	7.96	10.47
1730	17.50	6.75	11.28
1731	17.52	7.50	11.79
1732	17.53	8.66	11.65
1733	17.55	7.86	11.55
1734	17.57	8.16	11.64
1735	17.58	7.92	11.80
1736	17.60	7.88	11.89
1737	17.62	7.07	12.07
1738	17.63	6.61	11.36
1739	17.65	6.57	12.05
1740	17.67	6.59	12.02
1741	17.68	6.67	11.97
1742	17.70	6.40	12.12
1743	17.72	4.61	12.28
1744	17.73	7.26	12.02
1745	17.75	8.33	11.73
1746	17.77	10.10	10.07
1747	17.78	8.70	11.53
1748	17.80	8.20	11.54
1749	17.82	8.00	11.64
1750	17.83	7.75	11.85
1751	17.85	7.04	10.99
1752	17.87	6.72	10.57
1753	17.88	5.54	11.67
1754	17.90	5.54	12.31
1755	17.92	5.16	11.61
1756	17.93	5.71	12.28
1757	17.95	6.36	12.17
1758	17.97	6.23	12.16
1759	17.98	7.06	12.08
1800	18.00	6.48	12.01
1801	18.02	7.53	11.91
1802	18.03	8.36	11.75
1803	18.05	8.53	11.64
1804	18.07	9.80	9.40
1805	18.08	9.40	11.50
1806	18.10	7.73	11.67
1807	18.12	7.88	11.82
1808	18.13	8.00	11.83
1809	18.15	8.00	11.79
1810	18.17	8.48	11.74
1811	18.18	8.56	11.74
1812	18.20	7.79	11.82
1813	18.22	7.32	11.89
1814	18.23	8.05	11.08
1815	18.25	8.23	11.79
1816	18.27	7.75	11.82
1817	18.28	8.22	6.60
1818	18.30	7.68	11.60

MR1AMID

Time		O2 (%)	CO2 (%)
1819	18.32	10.57	11.25
1820	18.33	11.48	10.54
1821	18.35	8.80	11.32
1822	18.37	8.21	11.65
1823	18.38	7.94	11.26
1824	18.40	6.66	11.97
1825	18.42	7.53	11.87
1826	18.43	7.73	11.79
1827	18.45	6.70	11.93
1828	18.47	6.79	11.98
1829	18.48	6.49	12.03
1830	18.50	6.61	12.00
1831	18.52	7.71	11.76
1832	18.53	8.34	11.50
1833	18.55	7.97	11.65
1834	18.57	8.78	11.50
1835	18.58	8.85	11.50
1836	18.60	8.19	9.66
1837	18.62	7.72	11.78
1838	18.63	8.02	11.83
1839	18.65	8.51	11.73
1840	18.67	8.60	10.60
1841	18.68	8.47	11.31
1842	18.70	8.70	11.61
Average=		7.43	11.55
Min=		3.76	6.60
Max=		11.48	12.37
Std Dev=		1.11	.78
Variance=		1.24	.61

no recorders used at mid-point

```
MR1AOUT
RUN#1A MERC OUTLET
12-09-1987
MERC OUTLET
8910-L02-12
GWS
              0         1         2         3
             O2       CO2       SO2       NOx
10:51              0.02      0.04      0.11      0.08
10:52              0.00      0.00      0.00      0.00
10:53              0.00      0.00      0.00      0.00
10:54              0.00      0.00      0.00      0.00
10:55              0.00      0.00      0.00      0.00
MR1AOUT
RUN #1A MERC
12-09-1987
MERC OUTLET
8910-L02-12
GWS
MR1AOUT
RUN #1A
12-09-1987
MERC OUTLET
8910L02-12
GWS
              0         1         2
             O2       SO2       NOx
MR1AOUT
RUN #1A MERC
12-09-1987
MERC OUTLET
8910-L02-12
GWS
              0         1         2         3
             O2       CO2       SO2       NOx
11:04              0.48      1.05      2.44      1.61
11:05              0.46      1.11      2.49      1.55
11:06              0.43      1.14      2.51      1.54
11:07              0.44      1.04      2.49      1.54
11:08              0.43      1.10      2.48      1.55
11:09              0.40      1.03      2.49      1.55
11:10              0.40      1.09      2.46      1.53
11:10 INIT. ZERO
 0  O2   0.40
 1  CO2  1.09
 2  SO2  2.46
 3  NOx  1.53
11:16              1.15      1.28      6.28      1.54
11:17              0.43      1.12      6.14     26.05
11:18              0.39      1.11      6.28     45.81
11:19              0.45      1.17      6.35     48.86
11:20              0.49      1.16      6.35     48.45
11:21              0.48      1.15      6.45     48.25
11:21 INIT. SPAN
 3  NOx  48.25    107.80
11:24             21.84     80.52      3.51     39.29
11:25             17.27     82.57      3.17     30.58
11:26             16.54     82.68      3.00      6.04
11:27             16.49     82.69      2.96      2.17
11:28             16.48     82.70      2.86      1.78
11:28 INIT. SPAN
 1  CO2  82.70    12.00
11:34             52.87      1.65      2.72      1.65
11:35             51.32      1.42      2.69      1.63
```

```
11:36             52.71      1.34      2.69      1.54
11:37             53.72      1.35      2.60      1.50
11:38             54.24      1.29      2.61      1.49
11:39             54.51      1.31      2.59      1.50
11:40             54.70      1.31      2.62      1.52
11:41             54.81      1.25      2.53      1.49
11:42             54.91      1.22      2.56      1.49
11:42 INIT. SPAN
 0  O2  54.91    14.01
11:45              5.19      1.27     62.39      1.51
11:46              2.70      1.22     66.78      1.49
11:47              1.13      1.22     70.96      1.45
11:48              0.64      1.24     73.47      1.46
11:49              0.46      1.14     75.36      1.47
11:50              0.38      1.21     76.65      1.43
11:51              0.35      1.23     77.60      1.47
11:52              0.33      1.18     78.45      1.47
11:53              0.32      1.19     79.21      1.47
11:54              0.31      1.23     79.91      1.47
11:55              0.29      1.22     80.54      1.41
11:56              0.30      1.23     81.14      1.46
11:57              0.30      1.23     81.61      1.44
11:58              0.27      1.18     81.83      1.43
11:59              0.27      1.14     82.07      1.46
12:00              0.25      1.19     83.10      1.45
12:01              0.25      1.24     83.50      1.47
12:02              0.24      1.22     83.85      1.44
12:03              0.24      1.09     84.23      1.40
12:04              0.24      1.20     84.46      1.46
12:05              0.22      1.19     84.68      1.40
12:06              0.23      1.17     84.82      1.41
12:07              0.24      1.14     85.04      1.42
12:08              0.21      1.11     85.21      1.37
12:09              0.23      1.23     85.40      1.43
12:10              0.23      1.20     85.53      1.42
12:11              0.22      1.10     85.71      1.41
12:12              0.21      1.12     85.88      1.41
12:13              0.21      1.25     86.04      1.39
12:14              0.21      1.14     86.17      1.41
12:15              0.21      1.19     86.32      1.43
12:15 INIT. SPAN
 2  SO2  86.32    93.10

13:21   47.73   57.14   10.82   62.29
13:21   12.16    6.33     9.3   140.2

13:22   48.90   56.48   10.53   64.87
13:22   12.46    6.21     9.0   146.1

13:23   50.12   54.74   10.23   61.28
13:23   12.78    5.89     8.6   137.9

13:24   50.19   54.67   10.20   59.01
13:24   12.80    5.88     8.6   132.6

13:25   50.53   54.61   10.29   56.47
13:25   12.88    5.87     8.7   126.8

13:26   51.70   53.28   10.07   56.42
13:26   13.18    5.63     8.4   126.7

13:27   49.27   57.12   10.54   55.89
13:27   12.56    6.33     9.0   125.4

13:28   48.75   57.71   10.53   53.09
13:28   12.43    6.44     9.0   119.0

13:29   50.50   55.07   10.24   57.42
13:29   12.88    5.95     8.6   128.9

13:30   49.38   56.85   10.44   55.78
13:30   12.59    6.28     8.9   125.2
```

```
13:31   48.52   58.25   10.54   52.82
13:31   12.37    6.54    9.0   118.3

13:32   46.95   60.42   10.79   54.65
13:32   11.96    6.96    9.2   122.6

13:33   46.35   61.20   10.95   56.49
13:33   11.81    7.12    9.4   126.8

13:34   46.17   61.70   15.28   60.45
13:34   11.76    7.22   14.2   135.9

13:35   44.92   63.12   20.66   62.34
13:35   11.44    7.50   20.2   140.3

13:36   45.59   62.00   16.85   73.96
13:36   11.62    7.28   16.0   167.1

13:37   37.70   71.97   14.85   69.58
13:37    9.59    9.41   13.8   157.0

13:38   32.80   77.35   14.37   65.76
13:38    8.33   10.67   13.2   148.2

13:39   31.51   78.60   13.43   75.59
13:39    8.00   10.97   12.2   170.9

13:40   29.00   80.85   13.31   77.71
13:40    7.35   11.53   12.0   175.8

13:41   29.90   79.85   13.13   68.53
13:41    7.58   11.28   11.8   154.6

13:42   36.02   74.51   12.87   69.14
13:42    9.16    9.99   11.6   156.0

13:43   40.88   69.36   11.25   68.54
13:43   10.40    8.82    9.8   154.6

13:44   39.53   70.47    8.89   67.20
13:44   10.06    9.07    7.1   151.5

13:45   39.42   70.99   11.95   63.04
13:45   10.03    9.19   10.5   141.9

13:46   39.58   70.68   11.72   63.07
13:46   10.07    9.12   10.3   142.0

13:47   37.33   73.10   11.69   63.02
13:47    9.49    9.67   10.2   141.9

13:48   37.87   73.75   11.38   62.92
13:48    9.63    9.82    9.9   141.6

13:49   38.44   73.13   11.31   65.18
13:49    9.78    9.67    9.8   146.9

13:50   36.98   74.60   11.37   63.74
13:50    9.40   10.01    9.9   143.5

13:51   37.20   74.32   11.52   63.70
13:51    9.46    9.95   10.1   143.4

13:52   35.69   75.69   11.88   65.25
13:52    9.07   10.27   10.5   147.0

13:53   37.41   74.04   11.59   67.41
13:53    9.51    9.89   10.1   152.0

13:54   40.71   70.26   10.89   70.97
13:54   10.36    9.02    9.4   160.2

13:55   39.11   71.90   10.97   71.07
13:55    9.95    9.39    9.4   160.4

13:56   32.86   78.24   11.78   71.58
13:56    8.34   10.89   10.3   161.6

13:57   31.88   79.01   11.98   78.75
13:57    8.09   11.08   10.6   178.2

13:58   32.81   78.15   11.93   86.56
13:58    8.33   10.86   10.5   196.2

13:59   27.71   82.75   11.91   87.89
13:59    7.02   12.01   10.5   199.2

14:00   27.25   83.25   13.04   93.61
14:00    6.90   12.14   11.7   212.5

14:01   28.41   82.36   12.93  101.60
14:01    7.20   11.91   11.6   230.9

14:02   29.40   81.71   12.65  102.17
14:02    7.45   11.75   11.3   232.2

14:03   30.79   80.47   12.39  100.38
14:03    7.81   11.44   11.0   228.1

14:04   33.81   77.54   11.84   95.63
14:04    8.59   10.72   10.4   217.1

14:05   34.64   76.85   11.39   91.55
14:05    8.80   10.55    9.9   207.7

14:06   34.68   76.84   11.22   86.37
14:06    8.81   10.55    9.7   195.7

14:07   33.97   77.58   11.28   82.96
14:07    8.63   10.73    9.8   187.9

14:08   32.05   79.42   11.53   81.96
14:08    8.14   11.17   10.1   185.6

14:09   29.45   81.87   11.87   83.60
14:09    7.47   11.79   10.5   189.4

14:10   32.93   78.48   11.72   85.88
14:10    8.36   10.94   10.3   194.6

14:11   34.13   77.36   11.55   87.24
14:11    8.67   10.67   10.1   197.7

14:12   29.87   81.56   12.17   85.06
14:12    7.57   11.71   10.8   192.7

14:13   29.98   81.50   12.33   87.48
14:13    7.60   11.70   11.0   198.3

14:14   30.94   80.46   12.24   92.49
14:14    7.85   11.44   10.9   209.9

14:15   27.14   83.91   13.02   91.25
14:15    6.87   12.31   11.7   207.0

14:16   23.25   87.13   13.80   94.44
14:16    5.87   13.16   12.6   214.4

14:17   20.52   89.30   14.19  102.01
14:17    5.17   13.75   13.0   231.8

14:18   26.03   84.86   13.90  106.75
14:18    6.59   12.56   12.7   242.8

14:19   35.79   75.71   12.72  105.83
14:19    9.10   10.28   11.4   240.6

14:20   39.25   71.92   11.38   95.77
14:20    9.99    9.40    9.9   217.4

14:21   37.03   74.40   11.46   78.84
14:21    9.41    9.97   10.0   178.4

14:22   36.10   75.49   11.50   70.15
14:22    9.18   10.22   10.0   158.3

14:23   34.78   76.83   11.92   71.25
14:23    8.84   10.54   10.5   160.9

14:24   35.71   75.78   12.66   73.52
14:24    9.07   10.29   11.3   166.1

14:25   26.81   84.07   15.02   77.80
```

```
14:25    6.79   12.35    13.9   176.0

14:26   22.76   87.59   18.50   88.10
14:26    5.75   13.29    17.8   199.7

14:27   23.61   87.02   21.56   97.36
14:27    5.96   13.13    21.2   221.1

14:28   28.20   83.27   21.31   98.19
14:28    7.14   12.15    20.9   223.0

14:29   26.68   84.57   20.73   94.42
14:29    6.75   12.49    20.3   214.3

14:30   26.09   85.26   21.01   92.46
14:30    6.60   12.67    20.6   209.8

14:31   30.03   81.66   19.96   94.77
14:31    7.62   11.74    19.4   215.1

14:32   30.57   81.25   18.17   95.03
14:32    7.75   11.63    17.4   215.7

14:33   34.44   77.39   16.11   92.40
14:33    8.75   10.68    15.2   209.7

14:34   37.91   73.96   14.64   87.17
14:34    9.64    9.87    13.5   197.6

14:35   36.32   75.62   14.20   77.91
14:35    9.23   10.26    13.0   176.2

14:36   33.35   78.69   14.94   72.86
14:36    8.47   10.99    13.9   164.6

14:37   31.41   80.63   16.67   74.92
14:37    7.97   11.48    15.8   169.3

14:38   35.77   76.38   17.52   79.49
14:38    9.09   10.44    16.7   179.9

14:39   35.56   76.39   19.46   81.27
14:39    9.04   10.44    18.9   184.0

14:40   36.10   75.82   23.08   77.00
14:40    9.17   10.30    22.9   174.1

14:41   34.73   77.08   28.72   74.86
14:41    8.82   10.60    29.1   169.2

14:42   33.11   78.57   33.98   74.30
14:42    8.41   10.97    35.0   167.9

14:43   29.83   81.80   40.05   75.76
14:43    7.57   11.77    41.7   171.3

14:44   29.81   81.87   39.90   79.77
14:44    7.56   11.79    41.6   180.5

14:45   31.80   80.12   34.97   84.44
14:45    8.07   11.35    36.1   191.3

14:46   37.09   74.79   28.51   83.51
14:46    9.43   10.06    28.9   189.1

14:47   38.26   73.35   24.55   77.28
14:47    9.73    9.72    24.5   174.8

14:48   36.50   75.29   21.15   69.76
14:48    9.28   10.18    20.7   157.4

14:49   43.63   67.24   18.17   67.54
14:49   11.11    8.36    17.4   152.3

14:50   43.05   67.79   16.66   65.99
14:50   10.96    8.48    15.8   148.7

14:51   34.94   76.52   16.94   60.98
14:51    8.88   10.47    16.1   137.2

14:52   34.35   77.22   19.15   66.08
14:52    8.73   10.64    18.5   148.9
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14:53   30.87   80.61   22.04   74.40
14:53    7.83   11.47    21.7   168.1

14:54   31.65   79.90   24.40   72.09
14:54    8.03   11.29    24.4   162.8

14:55   37.15   74.35   24.49   71.51
14:55    9.45    9.96    24.5   161.5

14:56   31.11   80.15   25.60   72.42
14:56    7.89   11.36    25.7   163.6

14:57   25.55   84.84   27.74   72.92
14:57    6.46   12.56    28.1   164.7

14:58   22.11   87.40   28.04   87.10
14:58    5.58   13.23    28.4   197.4

14:59   20.19   88.72   30.18  102.12
14:59    5.09   13.59    30.8   232.1

15:00   19.80   89.19   34.43  108.40
15:00    4.99   13.72    35.5   246.6

15:01   20.62   88.63   31.91  108.64
15:01    5.20   13.57    32.7   247.1

15:02   22.24   87.46   28.87  107.90
15:02    5.61   13.25    29.3   245.4

15:03   24.05   86.05   24.53  107.04
15:03    6.08   12.87    24.5   243.4

15:04   24.01   86.32   21.90  104.28
15:04    6.07   12.94    21.6   237.1

15:05   27.73   83.51   20.35  102.18
15:05    7.02   12.21    19.9   232.2

15:06   35.76   76.26   18.27  104.26
15:06    9.09   10.41    17.6   237.0

15:07   36.84   75.30   17.04   95.75
15:07    9.37   10.18    16.2   217.4

15:08   38.73   73.14   15.96   84.24
15:08    9.85    9.68    15.0   190.8

15:09   39.97   71.81   15.37   84.58
15:09   10.17    9.37    14.3   191.6

15:10   40.59   71.06   15.20   79.61
15:10   10.33    9.20    14.1   180.2

15:11   34.68   77.21   17.26   75.85
15:11    8.81   10.63    16.4   171.5

15:12   32.79   79.05   19.44   77.73
15:12    8.33   11.09    18.9   175.8

15:13   33.04   78.85   20.08   85.86
15:13    8.39   11.04    19.6   194.6

15:14   27.87   83.39   19.46   88.47
15:14    7.06   12.18    18.9   200.6

15:15   24.54   86.48   18.24   90.33
15:15    6.21   12.99    17.5   204.9

15:16   26.89   84.70   16.94   97.91
15:16    6.81   12.52    16.1   222.4

15:17   24.41   86.80   16.60   97.53
15:17    6.17   13.07    15.7   221.5

15:18   24.65   86.66   16.71   96.60
15:18    6.23   13.04    15.8   219.3

15:19   29.37   82.75   16.85   98.81
15:19    7.44   12.01    16.0   224.5
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```
15:20   29.39   82.69   18.02   99.58
15:20    7.45   12.00    17.3   226.2

15:21   27.47   84.31   19.88   99.24
15:21    6.96   12.42    19.3   225.5

15:22   28.18   83.73   22.27  103.51
15:22    7.14   12.27    22.0   235.3

15:23   30.30   81.85   24.19  105.68
15:23    7.69   11.78    24.1   240.3

15:24   30.90   81.19   26.45  101.56
15:24    7.84   11.62    26.6   230.8

15:25   33.88   78.44   26.81   98.74
15:25    8.61   10.93    27.0   224.3

15:26   32.86   79.62   24.62   95.15
15:26    8.34   11.23    24.6   216.0

15:27   31.79   80.18   23.68   93.32
15:27    8.07   11.36    23.6   211.8

15:28   34.04   78.08   26.77   93.91
15:28    8.65   10.85    27.0   213.1

15:29   33.88   78.26   25.04   92.97
15:29    8.61   10.89    25.1   211.0

15:30   33.74   78.20   21.17   92.13
15:30    8.57   10.88    20.8   209.0      ← START @ 1536

15:31   31.27   80.16   13.95   90.09
15:31    7.93   11.36    12.8   204.3

15:32   31.35   80.08   17.22   91.83
15:32    7.95   11.34    16.4   208.3

15:33   30.90   80.38   16.54   94.65
15:33    7.84   11.42    15.6   214.9

15:34   23.11   86.82   17.00   95.61
15:34    5.84   13.08    16.1   217.1

15:35   17.23   91.25   17.80  102.68
15:35    4.32   14.29    17.0   233.4

15:36   15.52   92.75   22.99  109.68
15:36    3.88   14.71    22.8   249.5

15:37   21.40   88.66   28.43  107.75
15:37    5.40   13.57    28.8   245.1

15:38   26.87   84.49   30.13  103.57
15:38    6.80   12.46    30.7   235.4

15:39   33.04   79.14   29.81  101.15
15:39    8.39   11.11    30.4   229.9

15:40   35.45   76.80   28.19   95.73
15:40    9.01   10.54    28.6   217.3

15:41   36.52   75.62   26.23   90.57
15:41    9.28   10.26    26.4   205.4

15:42   38.69   73.34   23.84   87.80
15:42    9.84    9.72    23.7   199.0

15:43   36.19   75.88   21.54   84.58
15:43    9.20   10.32    21.2   191.6

15:44   37.05   74.88   19.06   85.25
15:44    9.42   10.08    18.4   193.2

15:45   38.62   73.23   17.10   87.15
15:45    9.82    9.70    16.3   197.6

15:46   34.48   77.69   16.62   85.58
15:46    8.76   10.75    15.7   193.9

15:47   30.12   81.77   16.74   87.24
```

```
15:47    7.64   11.76    15.9   197.8

15:48   27.72   83.82   17.23   93.81
15:48    7.02   12.29    16.4   212.9

15:49   29.39   82.52   16.54  100.09
15:49    7.45   11.96    15.6   227.4

15:50   25.99   84.98   16.33  101.88
15:50    6.58   12.59    15.4   230.2

15:51   23.86   87.18   22.73  102.04
15:51    6.03   13.18    22.5   231.9

15:52   27.23   84.51   26.38  104.02
15:52    6.89   12.47    26.6   236.5

15:53   31.59   80.79   28.60  100.90
15:53    8.02   11.52    29.0   229.3

15:54   31.74   80.71   33.30   93.74
15:54    8.06   11.50    34.2   212.8

15:55   31.03   81.36   41.28   87.22
15:55    7.87   11.66    43.1   197.7

15:56   30.05   82.27   47.70   84.69
15:56    7.62   11.89    50.2   191.9

15:57   28.69   83.51   49.26   85.53
15:57    7.27   12.21    52.0   193.8

15:58   30.02   82.23   39.57   85.83
15:58    7.61   11.88    41.2   194.5

15:59   31.10   81.22   31.69   85.64
15:59    7.89   11.62    32.5   194.1

16:00   29.36   82.86   26.32   85.03
16:00    7.44   12.04    26.5   192.7

16:01   32.20   80.51   23.04   84.14
16:01    8.17   11.45    22.8   190.6

16:02   33.85   78.88   21.10   82.07
16:02    8.60   11.04    20.7   185.8

16:03   28.40   83.60   21.96   79.05
16:03    7.20   12.23    21.6   178.9

16:04   23.24   87.83   25.88   80.84
16:04    5.87   12.35    26.0   183.0

16:05   22.86   88.01   34.87   88.18
16:05    5.77   13.40    36.0   199.9

16:06   22.72   88.15   41.17   95.29
16:06    5.74   13.44    43.0   216.3

16:07   23.33   87.82   43.87   97.95
16:07    5.89   13.35    46.0   222.5

16:08   28.28   83.77   46.88   96.88
16:08    7.17   12.28    49.3   220.0

16:09   32.68   80.04   40.84   94.59
16:09    8.30   11.33    42.6   214.7

16:10   33.15   79.71   36.02   91.46
16:10    8.42   11.25    37.3   207.5

16:11   33.76   79.14   31.08   88.76
16:11    8.57   11.11    31.8   201.3

16:12   35.37   77.62   26.09   90.13
16:12    8.99   10.74    26.2   204.4

16:13   34.97   77.91   22.16   87.50
16:13    8.89   10.81    21.9   198.4

16:14   30.71   81.70   20.64   83.52
16:14    7.79   11.75    20.2   189.2
```

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16:15  27.65  84.21  21.43  84.75
16:15   7.00  12.39   21.1  192.0

16:16  27.64  84.29  23.53  89.76
16:16   7.00  12.41   23.4  203.6

16:17  26.64  84.86  27.14  90.85
16:17   6.74  12.56   27.4  206.1

16:18  25.75  85.68  30.07  89.70
16:18   6.52  12.78   30.7  203.4

16:19  24.96  86.36  32.04  92.79
16:19   6.31  12.96   32.8  210.6

16:20  27.58  84.34  34.72  94.01
16:20   6.99  12.42   35.8  213.4

16:21  27.32  84.45  36.72  94.94
16:21   6.92  12.45   38.0  215.5

16:22  29.34  82.91  39.57  95.00
16:22   7.44  12.05   41.2  215.7

16:23  31.56  81.00  40.68  91.87
16:23   8.01  11.57   42.4  208.4

16:24  29.51  82.68  39.35  89.93
16:24   7.48  12.00   41.0  204.0

16:25  27.51  84.50  37.96  90.61
16:25   6.97  12.47   39.4  205.5

16:26  28.43  83.77  32.22  94.23
16:26   7.20  12.28   33.0  213.9

16:27  29.31  82.89  25.98  94.90
16:27   7.43  12.05   26.1  215.4

16:28  27.38  84.52  23.02  93.53
16:28   6.93  12.47   22.8  212.3

16:29  28.30  83.78  22.09  93.13
16:29   7.17  12.28   21.8  211.4

16:30  27.71  84.18  22.59  93.63
16:30   7.02  12.38   22.4  212.5

16:31  25.00  86.44  24.09  93.22
16:31   6.32  12.98   24.0  211.5

16:32  24.25  87.02  27.16  95.56
16:32   6.13  13.13   27.4  217.0

16:33  26.58  85.27  29.56  97.21
16:33   6.73  12.67   30.1  220.7

16:34  29.89  82.68  30.32  97.83
16:34   7.58  12.00   30.9  222.2

16:35  32.35  80.43  30.05  95.77
16:35   8.21  11.43   30.6  217.4

16:36  31.08  81.49  30.97  88.97
16:36   7.89  11.69   31.7  201.8

16:37  31.07  81.62  33.87  87.90
16:37   7.88  11.73   34.9  199.3

16:38  31.03  81.53  35.03  90.49
16:38   7.87  11.70   36.2  205.2

16:39  29.33  82.98  37.84  87.93
16:39   7.44  12.07   39.3  199.3

16:40  29.93  82.47  37.31  91.13
16:40   7.59  11.94   38.7  206.7

16:41  27.88  84.20  34.95  90.59
16:41   7.06  12.39   36.1  205.5
```

```
16:42  25.52  86.17  29.75  90.68
16:42   6.46  12.91   30.3  205.7

16:43  29.12  83.10  27.47  97.49
16:43   7.38  12.10   27.8  221.4

16:44  29.91  82.25  26.03  97.01
16:44   7.59  11.89   26.2  220.3

16:45  27.16  84.55  27.02  91.84
16:45   6.88  12.48   27.3  208.4

16:46  27.47  84.35  27.53  93.66
16:46   6.96  12.43   27.8  212.6

16:47  30.05  82.11  28.73  96.35
16:47   7.62  11.85   29.2  218.8

16:48  31.12  81.32  30.52  93.79
16:48   7.89  11.65   31.1  212.9

16:49  29.87  82.38  32.72  90.84
16:49   7.57  11.92   33.6  206.1

16:50  30.30  81.99  34.55  90.06
16:50   7.69  11.82   35.6  204.3

16:51  31.55  80.75  38.75  91.87
16:51   8.01  11.51   40.3  208.4

16:52  33.20  79.07  40.38  93.58
16:52   8.46  11.09   42.1  212.4

16:53  34.27  77.99  42.03  92.06
16:53   8.70  10.83   43.9  208.9

16:54  32.10  80.13  42.54  91.41
16:54   8.15  11.35   44.5  207.4

16:55  31.31  80.75  41.09  93.09
16:55   7.94  11.51   42.9  211.3

16:56  35.01  77.13  37.31  93.25
16:56   8.89  10.62   38.7  211.6

16:57  36.49  75.62  32.33  90.22
16:57   9.27  10.26   33.2  204.6

16:58  32.64  79.47  28.66  85.43
16:58   8.29  11.19   29.1  193.6

16:59  26.49  84.69  31.42  83.65
16:59   6.71  12.52   32.2  189.5

17:00  21.75  88.50  44.94  91.27
17:00   5.49  13.53   47.2  207.1

17:01  26.13  85.24  52.83 102.95
17:01   6.61  12.66   55.9  234.0

17:02  30.29  81.83  44.60 103.67
17:02   7.68  11.78   46.8  235.7

17:03  31.46  80.62  38.32  97.01
17:03   7.98  11.47   39.8  220.3

17:04  29.12  82.75  39.13  93.36
17:04   7.38  12.01   40.7  211.9

17:05  31.73  80.47  46.19  92.93
17:05   8.05  11.44   48.6  210.9

17:06  32.22  80.08  48.36  92.29
17:06   8.18  11.34   51.0  209.4

17:07  31.96  80.15  49.14  88.92
17:07   8.11  11.36   51.8  201.6

17:08  34.30  77.99  47.42  85.99
17:08   8.71  10.82   49.9  194.9

17:09  34.97  77.20  42.10  83.07
```

pool change! 1650

```
17:09     8.88   10.63    44.0   188.1

17:10    33.78   78.23   35.50   81.86
17:10     8.58   10.88    36.7   185.3

17:11    32.95   78.95   30.62   82.19
17:11     8.37   11.06    31.3   186.1

17:12    33.50   78.39   26.38   84.73
17:12     8.51   10.92    26.6   192.0

17:13    30.80   80.94   23.33   86.13
17:13     7.81   11.55    23.2   195.2

17:14    29.28   82.31   23.84   86.39
17:14     7.42   11.90    23.7   195.8

17:15    29.32   82.02   27.49   90.40
17:15     7.43   11.83    27.8   205.0

17:16    28.20   82.92   39.56   94.62
17:16     7.14   12.06    41.2   214.8

17:17    33.28   78.26   53.99   99.25
17:17     8.45   10.89    57.2   225.5

17:18    34.35   77.08   67.31  101.23
17:18     8.73   10.61    72.0   230.0

17:19    37.25   74.17   69.16   97.88
17:19     9.47    9.91    74.0   222.3

17:20    38.36   72.98   59.55   92.00
17:20     9.76    9.64    63.4   208.7

17:21    31.61   79.76   56.57   83.42
17:21     8.02   11.26    60.1   188.9

17:22    25.30   85.38   51.08   82.85
17:22     6.40   12.70    54.0   187.6

17:23    23.59   86.77   43.67   94.55
17:23     5.96   13.07    45.8   214.6

17:24    24.09   86.37   37.03  104.43
17:24     6.09   12.96    38.4   237.4

17:25    27.90   83.16   30.38  108.77
17:25     7.07   12.12    31.0   247.4

17:26    31.35   80.10   25.77  107.07
17:26     7.95   11.35    25.9   243.5

17:27    33.40   78.16   22.72   98.53
17:27     8.48   10.87    22.5   223.8

17:28    32.58   78.92   20.87   91.72
17:28     8.27   11.05    20.4   208.1

17:29    31.38   79.89   20.54   88.56
17:29     7.96   11.29    20.1   200.8

17:30    30.43   80.86   21.38   90.18
17:30     7.72   11.53    21.0   204.5

17:31    32.84   78.47   21.57   95.44
17:31     8.34   10.94    21.2   216.7

17:32    34.68   76.63   21.45   96.34
17:32     8.81   10.50    21.1   218.7

17:33    36.10   75.38   20.71   90.88
17:33     9.17   10.20    20.3   206.1

17:34    34.53   77.03   20.60   86.32
17:34     8.77   10.59    20.1   195.6

17:35    31.62   79.96   20.88   82.38
17:35     8.02   11.31    20.5   186.5

17:36    30.84   80.67   21.79   84.63
17:36     7.8[illegible]   11.49    21.5   191.7
```

Outlet rotating

```
17:37    26.93   84.31   22.43   88.66
17:37     6.82   12.42    22.2   201.0

17:38    28.29   83.17   22.32   91.03
17:38     7.17   12.12    22.1   206.5

17:39    28.42   83.17   21.69   94.40
17:39     7.20   12.12    21.4   214.3

17:40    29.13   82.41   20.60   94.05
17:40     7.38   11.93    20.1   213.5

17:41    29.47   81.92   20.52   95.83
17:41     7.47   11.80    20.0   217.6

17:42    25.82   85.01   22.12   99.34
17:42     6.53   12.60    21.8   225.7

17:43    22.92   87.43   25.88  103.09
17:43     5.79   13.24    26.0   234.3

17:44    29.37   82.05   29.34  105.23
17:44     7.45   11.84    29.8   239.3

17:45    35.48   76.34   29.09  104.05
17:45     9.02   10.43    29.6   236.6

17:46    38.83   73.05   25.00   95.38
17:46     9.88    9.66    25.0   216.5

17:47    36.84   75.13   22.30   84.12
17:47     9.37   10.14    22.0   190.6

17:48    36.09   75.81   20.93   76.34
17:48     9.17   10.30    20.5   172.6

17:49    34.91   76.84   20.17   76.37
17:49     8.87   10.55    19.7   172.7

17:50    31.21   80.53   20.13   78.04
17:50     7.92   11.45    19.6   176.5

17:51    28.66   82.64   20.93   79.90
17:51     7.26   11.99    20.5   180.8

17:52    28.75   82.48   20.35   86.46
17:52     7.29   11.94    19.9   196.0

17:53    25.17   85.59   19.01   89.49
17:53     6.37   12.75    18.4   202.9

17:54    22.38   87.80   18.48   91.65
17:54     5.65   13.34    17.8   207.9

17:55    21.56   88.39   18.39   98.50
17:55     5.44   13.50    17.7   223.7

17:56    23.33   86.94   18.36  102.67
17:56     5.89   13.11    17.7   233.4

17:57    25.94   84.85   18.42  107.92
17:57     6.56   12.56    17.7   245.5

17:58    26.03   84.78   18.87  106.15
17:58     6.59   12.54    18.2   241.4

17:59    27.35   83.59   19.80  102.44
17:59     6.93   12.23    19.3   232.8

18:00    28.40   82.55   20.55  102.88
18:00     7.20   11.96    20.1   233.8

18:01    30.70   80.58   20.56  100.55
18:01     7.79   11.46    20.1   228.5

18:02    33.59   77.97   19.39   99.90
18:02     8.53   10.82    18.8   227.0

18:03    35.21   76.43   18.10   94.09
18:03     8.95   10.45    17.4   213.6
```

```
18:04  36.51  75.15  17.22  89.59
18:04   9.28  10.14   16.4  203.2

18:05  37.50  74.19  16.21  88.43
18:05   9.54   9.92   15.3  200.5

18:06  34.32  77.50  15.71  86.10
18:06   8.72  10.71   14.7  195.1

18:07  31.37  80.33  15.37  84.99
18:07   7.96  11.40   14.3  192.6

18:08  31.53  80.20  15.03  89.01
18:08   8.00  11.37   14.0  201.8

18:09  32.31  79.37  14.78  91.46
18:09   8.20  11.16   13.7  207.5

18:10  33.42  78.40  14.61  89.57
18:10   8.49  10.92   13.5  203.1

18:11  33.50  78.34  14.63  87.54
18:11   8.51  10.91   13.5  198.4

18:12  31.72  80.05  15.16  84.52
18:12   8.05  11.33   14.1  191.5

18:13  31.38  80.40  15.96  84.67
18:13   7.96  11.42   15.0  191.8

18:14  32.59  79.46  17.15  84.10
18:14   8.27  11.18   16.3  190.5

18:15  33.10  79.07  18.31  84.45
18:15   8.40  11.09   17.6  191.3

18:16  32.31  79.69  19.13  84.04
18:16   8.20  11.24   18.5  190.4

18:17  34.92  77.14  19.65  83.18
18:17   8.87  10.62   19.1  188.4

18:18  35.93  76.03  19.49  81.19
18:18   9.13  10.35   18.9  183.8

18:19  40.55  71.08  18.30  77.60
18:19  10.32   9.21   17.6  175.5

18:20  46.37  63.81  16.00  76.33
18:20  11.82   7.64   15.0  172.6

18:21  38.11  73.60  15.58  69.15
18:21   9.69   9.78   14.6  156.0

18:22  34.94  76.95  15.90  67.49
18:22   8.88  10.57   14.9  152.2

18:23  31.84  79.78  17.27  75.18
18:23   8.08  11.26   16.4  169.9

18:24  29.58  81.82  20.24  82.52
18:24   7.50  11.78   19.7  186.9

18:25  30.71  80.76  22.56  90.23
18:25   7.79  11.51   22.3  204.7

18:26  32.68  78.73  21.73 102.34
18:26   8.30  11.01   21.4  232.6

18:27  29.75  81.29  21.77 109.90
18:27   7.54  11.64   21.4  250.0

18:28  29.09  81.88  22.03 109.63
18:28   7.37  11.79   21.7  249.4

18:29  28.13  82.97  22.40 105.86
18:29   7.13  12.07   22.1  240.7

18:30  28.80  82.38  21.85 105.69
18:30   7.30  11.92   21.5  240.3

18:31  32.58  79.03  19.83 105.97
18:31   8.27  11.08   19.3  241.0

18:32  37.05  74.69  18.00 100.52
18:32   9.42  10.04   17.3  228.4

18:33  34.88  76.91  17.57  92.34
18:33   8.86  10.56   16.8  209.5

18:34  36.80  74.89  17.02  89.19
18:34   9.35  10.08   16.2  202.3

18:35  36.32  75.42  16.68  87.34
18:35   9.23  10.21   15.8  198.0

18:36  36.01  75.55  16.53  82.83
18:36   9.15  10.24   15.6  187.6

18:37  32.46  79.00  16.97  79.29
18:37   8.24  11.07   16.1  179.4

18:38  31.63  79.74  17.69  81.45
18:38   8.03  11.25   16.9  184.4

18:39  33.26  78.10  17.76  84.65
18:39   8.44  10.85   17.0  191.8

18:40  35.52  75.81  17.23  85.40
18:40   9.03  10.30   16.4  193.5

18:41  32.66  78.63  17.48  84.31
18:41   8.29  10.98   16.7  191.0

18:42  29.96  80.96  14.88  87.77
18:42   7.60  11.56   13.8  199.0

18:43  51.65  54.74  14.93  99.19
18:43  13.17   5.89   13.8  225.3

18:44  64.67  31.83  11.40  91.55
18:44  16.52   2.45    9.9  207.7

18:45  70.21  18.79   9.31  60.02
18:45  17.94   1.12    7.6  135.0

18:46  71.88  13.51   8.12  34.62
18:46  18.37   0.71    6.3   76.3

18:47  72.43  11.38   7.45  22.78
18:47  18.51   0.57    5.5   49.0

18:48  73.33   8.20   6.79  18.04
18:48  18.74   0.38    4.8   38.1

18:49  73.55   6.88   6.37  13.83
18:49  18.80   0.30    4.3   28.4

18:50  73.48   6.17   6.14   9.91
18:50  18.78   0.27    4.1   19.3

18:51  73.48   5.35   6.01   8.05
18:51  18.78   0.23    3.9   15.0

18:52  73.39   4.93   5.96   6.84
18:52  18.76   0.21    3.9   12.3

18:53  73.21   4.58   5.87   5.70
18:53  18.71   0.19    3.8    9.6

18:54  73.12   4.29   5.70   5.02
18:54  18.69   0.18    3.6    8.1

18:55  73.00   4.04   5.80   4.49
18:55  18.66   0.17    3.7    6.8

19:09  49.57   2.42   3.72   2.29
19:09  12.64   0.10    1.4    1.8
19:10        1.31   1.59   2.63   1.95
19:11        0.65   1.61   2.57   1.68
19:12        0.47   1.64   2.53   1.19
19:13        0.41   1.61   2.47   1.17
```

```
19:14          0.36   1.59   2.46    1.15
19:15          0.33   1.65   2.39    1.15
19:16          0.33   1.66   2.43    1.15
19:17          0.32   1.58   2.38    1.15
19:17FINAL ZERO
 0  O2   0.32
 1  CO2  1.58
 2  SO2  2.38
 3  NOx  1.15
19:20          0.30   1.61  32.00    1.29
19:21          0.28   1.67  42.85    1.23
19:22          0.27   1.60  50.04    1.14
19:23          0.25   1.62  54.73    1.17
19:24          0.27   1.58  61.44    1.11
19:25          0.25   1.64  63.03    1.06
19:26          0.24   1.55  64.16    1.12
19:27          0.24   1.62  65.42    1.16
19:28          0.23   1.61  66.68    1.16
19:29          0.24   1.54  67.77    1.11
19:30          0.23   1.54  68.76    1.13
19:31          0.22   1.58  69.60    1.14
19:32          0.23   1.61  70.58    1.15
19:33          0.22   1.57  71.47    1.13
19:34          0.21   1.54  72.17    1.15
19:35          0.21   1.59  72.83    1.14
19:36          0.21   1.54  73.31    1.16
19:37          0.22   1.53  73.76    1.11
19:38          0.20   1.49  49.79    1.14
19:39          0.19   1.53  20.06    1.15
19:40          0.18   1.48  43.35    1.11
19:41          0.19   1.51  66.14    1.12
19:42          0.20   1.58  72.00    1.15
19:43          0.20   1.50  74.36    1.12
19:44          0.19   1.45  75.74    1.15
19:45          0.19   1.55  76.58    1.09
19:46          0.19   1.48  77.05    1.14
19:47          0.18   1.46  77.51    1.16
19:48          0.18   1.44  77.97    1.13
19:49          0.18   1.45  78.36    1.09
19:50          0.19   1.44  78.67    1.11
19:51          0.18   1.49  78.87    1.13
19:52          0.17   1.46  79.10    1.11
19:53          0.19   1.52  79.49    1.09
19:54          0.17   1.43  79.80    1.11
19:55          0.17   1.48  80.08    1.09
19:56          0.17   1.45  80.30    1.12
19:57          0.18   1.43  80.48    1.10
19:58          0.17   1.36  80.85    1.13
19:59          0.18   1.36  81.10    1.15
20:00          0.18   1.46  81.31    1.12
20:01          0.18   1.45  81.55    1.10
20:02          0.17   1.50  81.65    1.09
20:03          0.18   1.40  81.97    1.15
20:04          0.16   1.45  82.16    1.11
20:05          0.17   1.43  82.37    1.10
20:06          0.18   1.48  82.54    1.09
20:06FINAL SPAN
 2  SO2  82.54    53.10
20:09          1.59   1.52  51.59    1.19
20:10          0.39   1.43  32.56   16.48
20:11          0.24   1.37  23.32   38.83
20:12          0.21   1.38  19.06   45.63
20:13          0.20   1.42  16.62   45.85
20:14          0.21   1.40  14.96   45.60
20:15          0.18   1.44  13.73   45.17
20:16          0.18   1.39  12.83   46.53
```

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20:17          0.18   1.36  12.13   49.14
20:18          0.20   1.31  11.59   49.26
20:19          0.18   1.40  11.10   48.90
20:19FINAL SPAN
 3  NOx  48.90   107.80
20:22         52.40   1.43  16.19    0.10
20:23         52.40   1.37   9.56    0.08
20:24         52.49   1.39   7.34    0.07
20:24FINAL SPAN
 0   O2  52.49     14.01
20:31         17.37  81.60  12.29    0.09
20:32         15.79  82.64   8.00    0.06
20:33         15.64  82.75   6.36    0.08
20:34         15.37  82.77   5.53    0.09
20:35         15.40  82.71   5.00    0.06
20:36         15.40  82.75   4.64    0.09
20:36FINAL SPAN
 1  CO2  82.75     12.00
MR1AOUT
RUN #1A MERC
12-09-1987
MERC OUTLET
8910-L02-12
GWS


               O2     CO2     SO2     NOx

  1321.0    47.73   57.14   10.82   62.29
  1322.0    48.90   56.48   10.53   64.87
  1323.0    50.12   54.74   10.23   61.28
  1324.0    50.19   54.67   10.20   59.01
  1325.0    50.53   54.61   10.29   56.47
  1326.0    51.70   53.28   10.07   56.42
  1327.0    49.27   57.12   10.54   55.89
  1328.0    48.75   57.71   10.53   53.09
  1329.0    50.50   55.07   10.24   57.42
  1330.0    49.38   56.85   10.44   55.78
  1331.0    48.52   58.25   10.54   52.82
  1332.0    46.95   60.42   10.79   54.65
  1333.0    46.35   61.20   10.95   56.49
  1334.0    46.17   61.70   15.28   60.45
  1335.0    44.92   63.12   20.66   62.34
  1336.0    45.59   62.00   16.85   73.96
  1337.0    37.70   71.97   14.85   69.58
  1338.0    32.80   77.35   14.37   65.76
  1339.0    31.51   78.60   13.43   75.59
  1340.0    29.00   80.85   13.31   77.71
  1341.0    29.90   79.85   13.13   68.53
  1342.0    36.02   74.51   12.87   69.14
  1343.0    40.88   69.36   11.25   68.54
  1344.0    39.53   70.47    8.89   67.20
  1345.0    39.42   70.99   11.95   63.04
  1346.0    39.58   70.68   11.72   63.07
  1347.0    37.33   73.10   11.69   63.02
  1348.0    37.87   73.75   11.38   62.92
  1349.0    38.44   73.13   11.31   65.18
  1350.0    36.98   74.60   11.37   63.74
  1351.0    37.20   74.32   11.52   63.70
  1352.0    35.69   75.69   11.88   65.25
  1353.0    37.41   74.04   11.59   67.41
  1354.0    40.71   70.26   10.89   70.97
  1355.0    39.11   71.90   10.97   71.07
  1356.0    32.86   78.24   11.78   71.58
  1357.0    31.88   79.01   11.98   78.75
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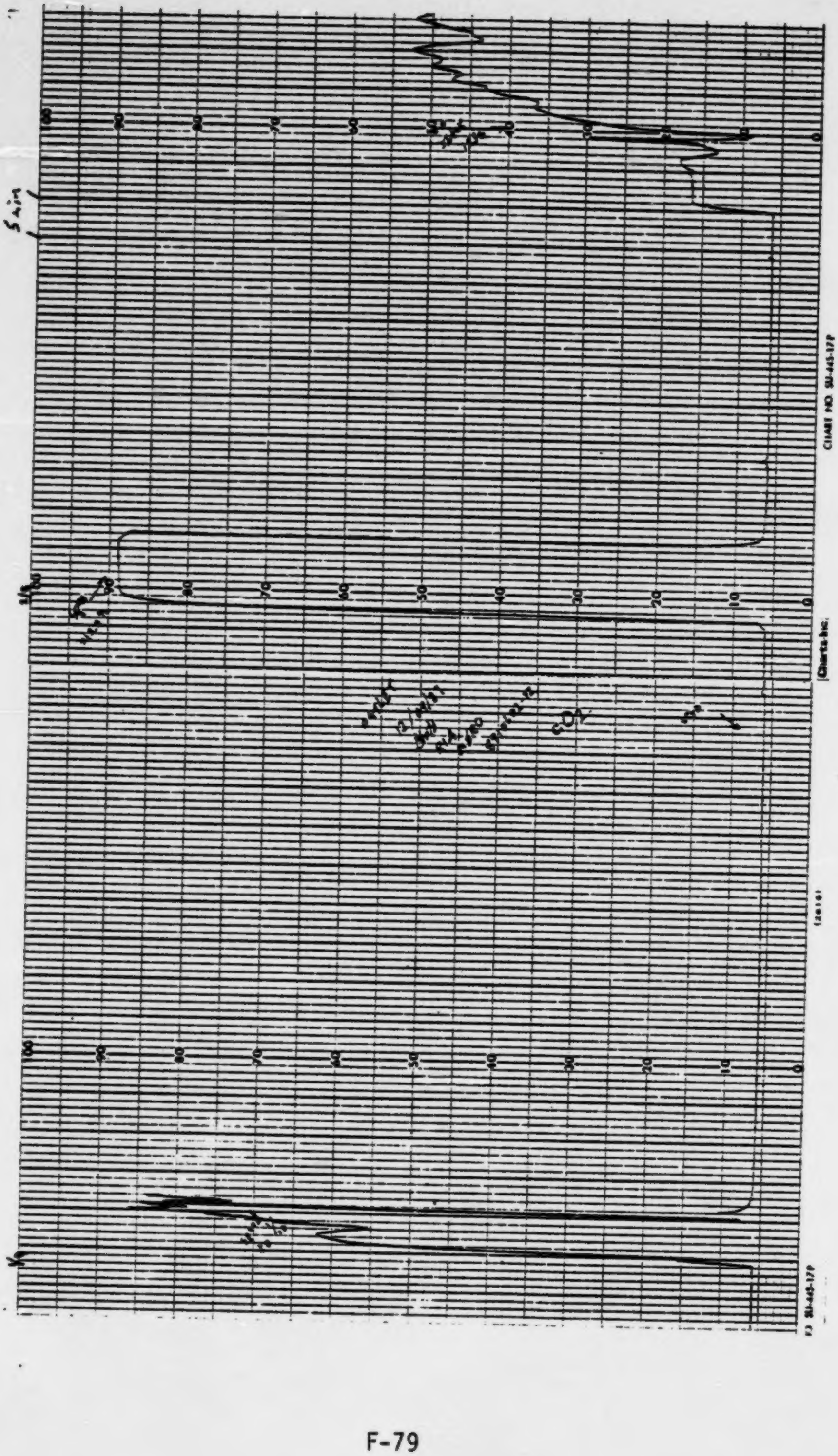

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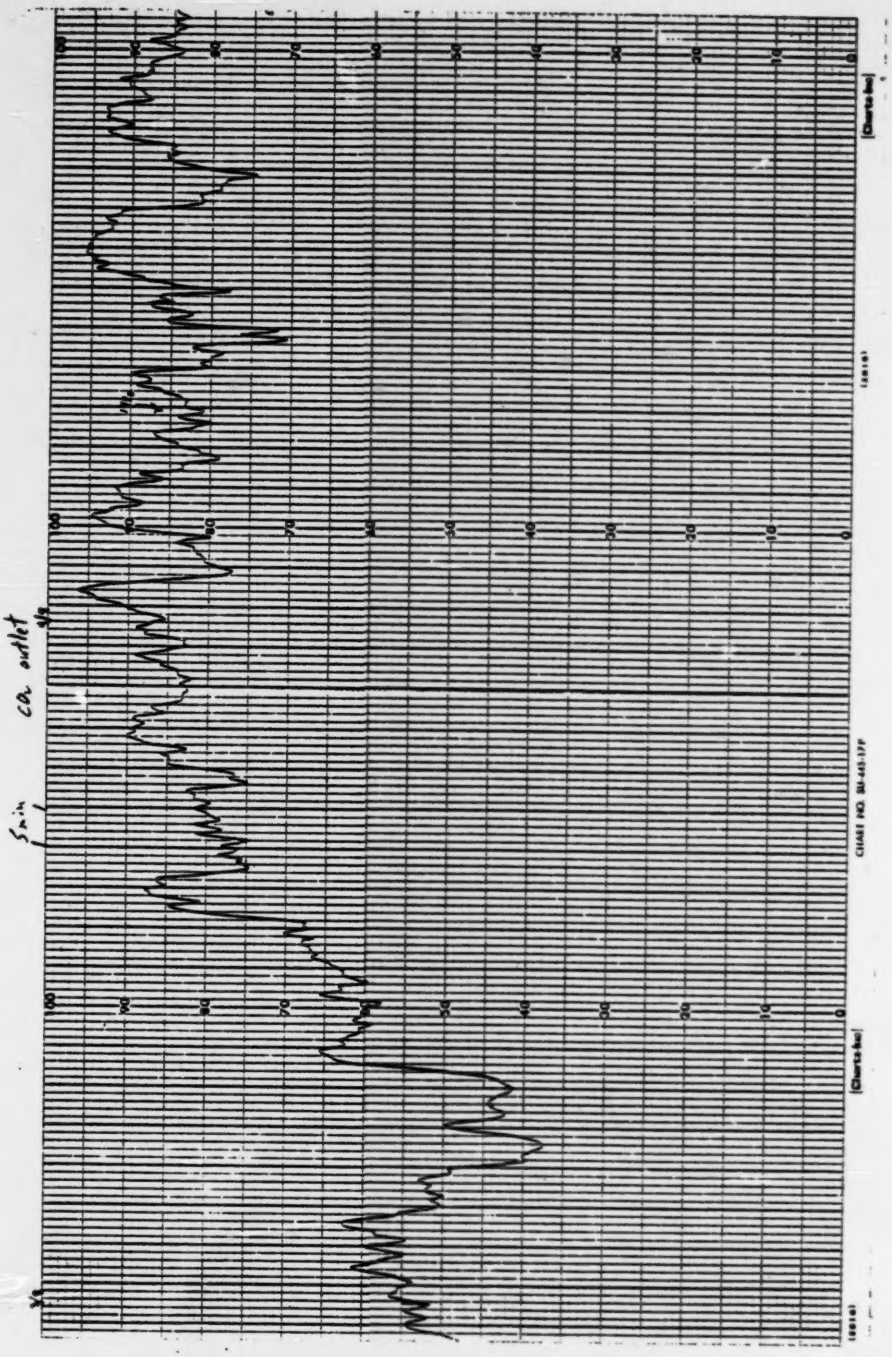
CHART NO SU-445-17P
Charts Inc.
CO2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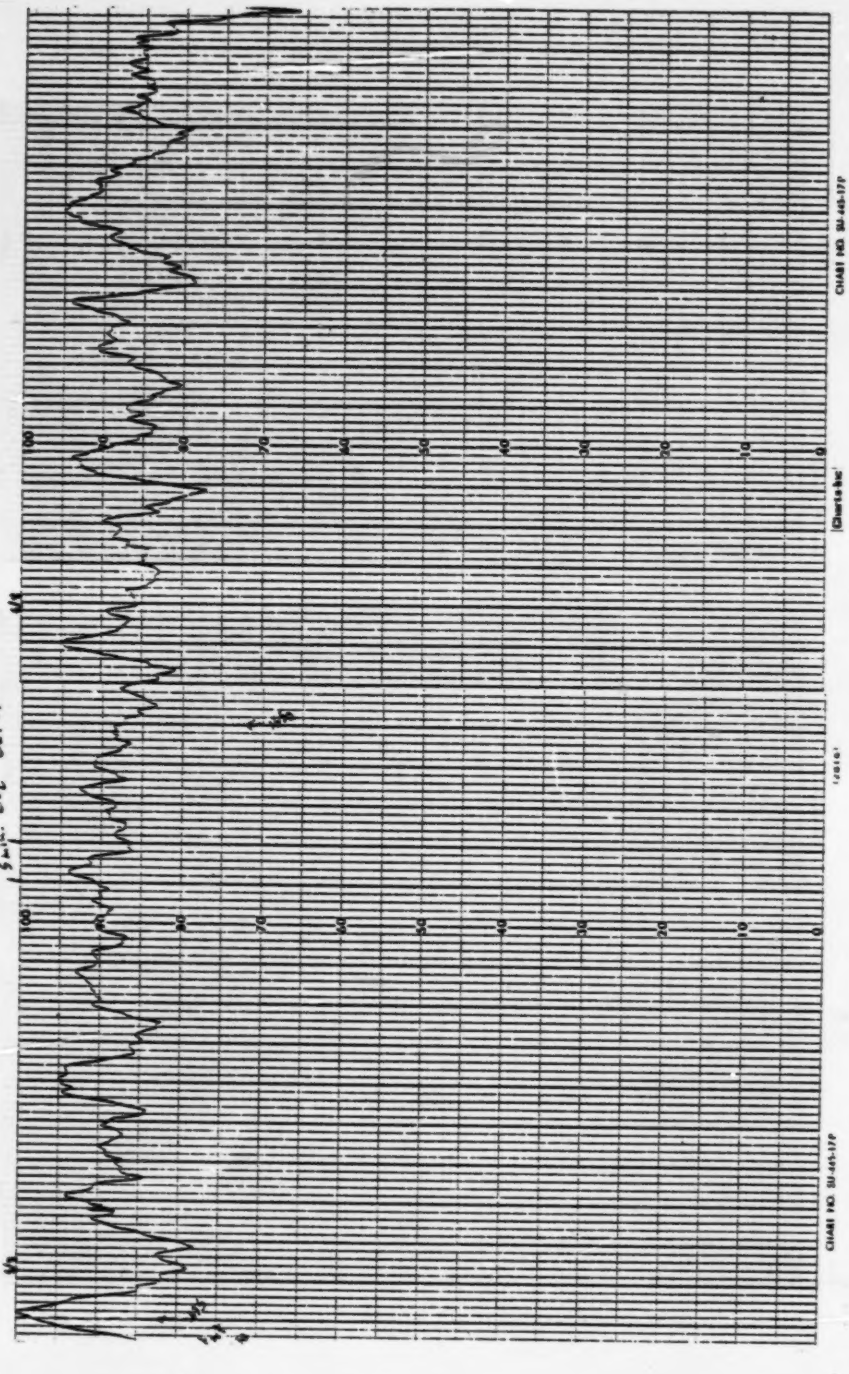
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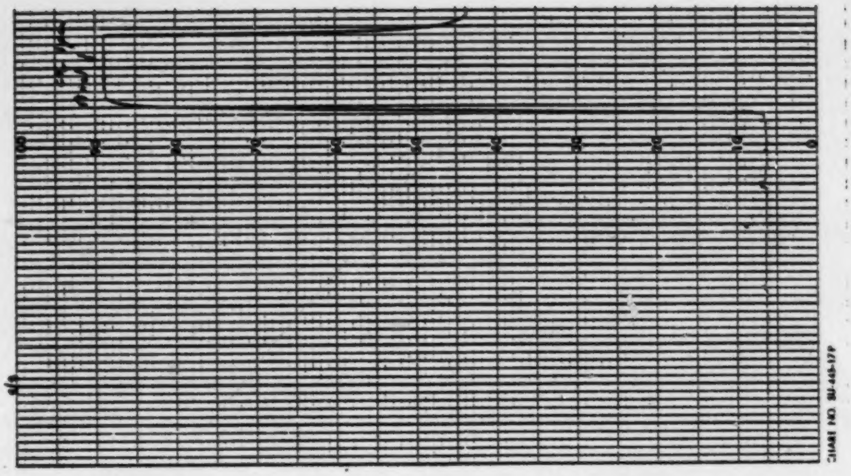
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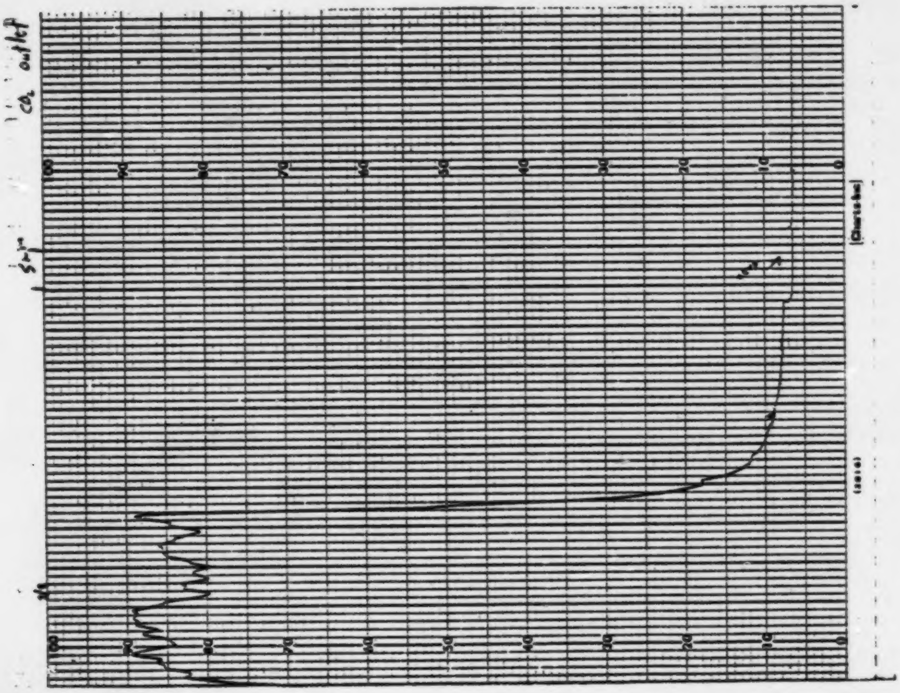
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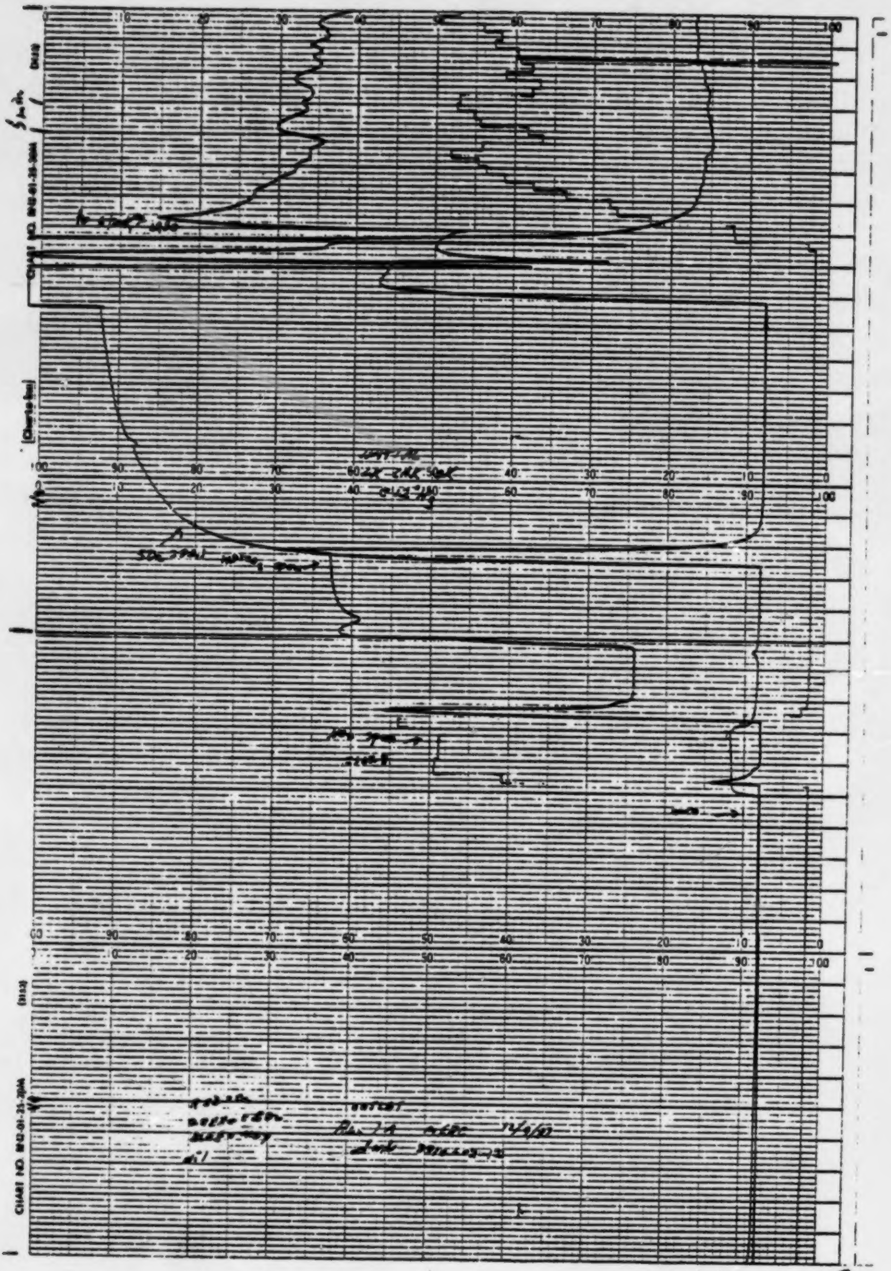
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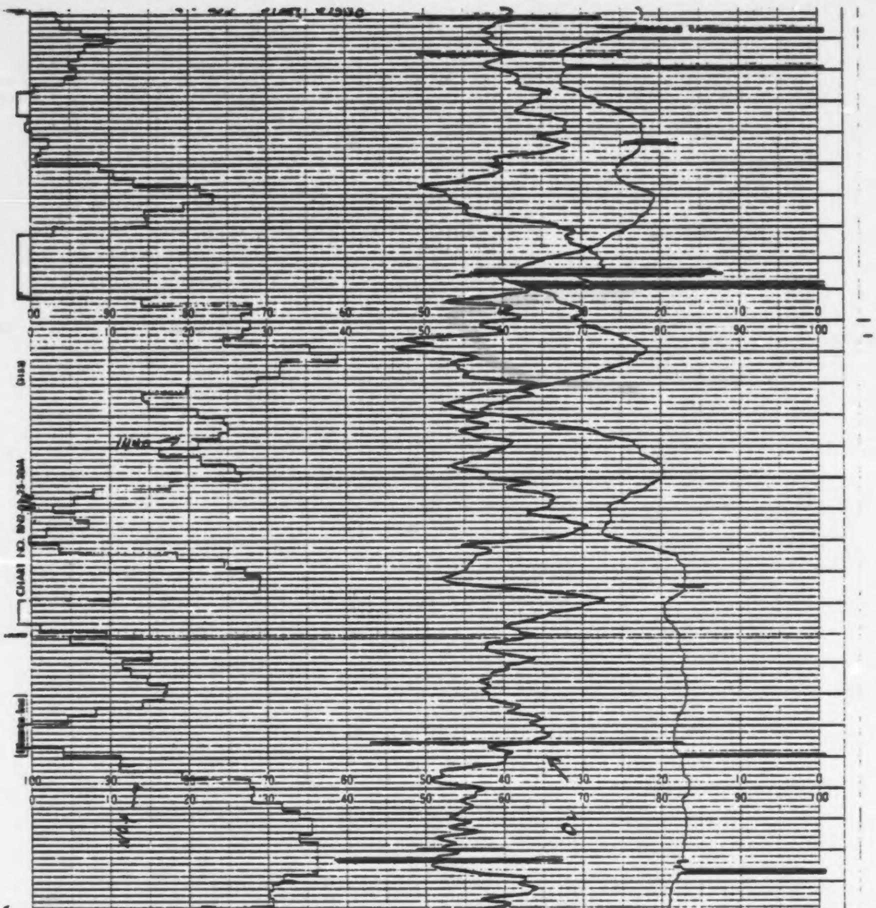
SO2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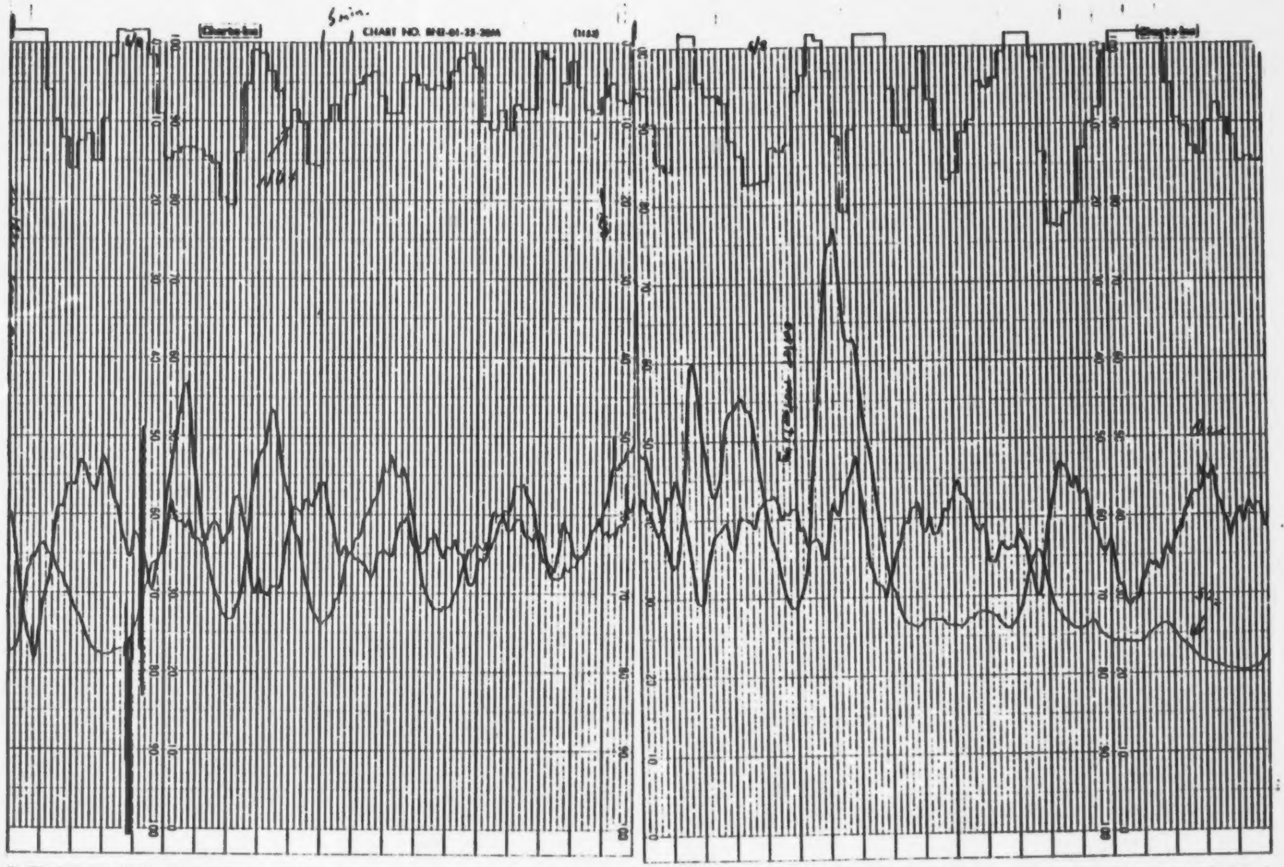
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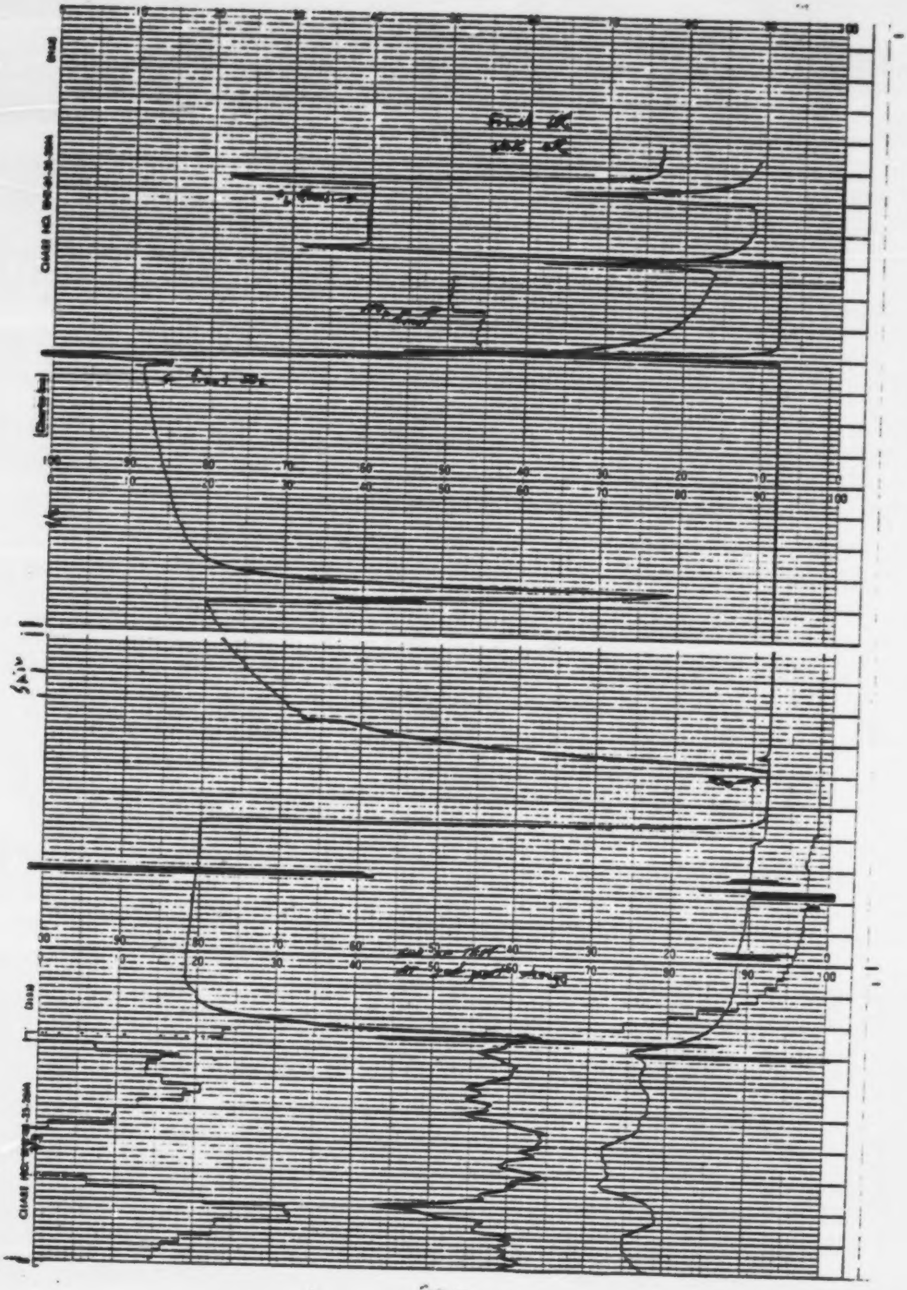
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70
80
90
100

MR1AOUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1530	15.50	8.77	10.87	21.3	203.9
1531	15.52	8.12	11.35	13.1	199.3
1532	15.53	8.14	11.33	16.8	203.2
1533	15.55	8.02	11.41	16.0	209.6
1534	15.57	5.98	13.07	16.6	211.7
1535	15.58	4.43	14.29	17.5	227.6
1536	15.60	3.98	14.71	23.4	243.3
1537	15.62	5.53	13.57	29.5	239.0
1538	15.63	6.96	12.46	31.5	229.6
1539	15.65	8.58	11.10	31.1	224.2
1540	15.67	9.22	10.53	29.3	212.0
1541	15.68	9.50	10.24	27.0	200.4
1542	15.70	10.07	9.71	24.3	194.2
1543	15.72	9.41	10.31	21.7	187.0
1544	15.73	9.64	10.07	18.9	188.5
1545	15.75	10.05	9.68	16.7	192.7
1546	15.77	8.96	10.74	16.1	189.2
1547	15.78	7.82	11.76	16.3	192.9
1548	15.80	7.19	12.28	16.8	207.7
1549	15.82	7.62	11.95	16.0	221.8
1550	15.83	6.73	12.59	15.8	224.5
1551	15.85	6.17	13.17	23.1	226.2
1552	15.87	7.06	12.46	27.2	230.6
1553	15.88	8.20	11.51	29.7	223.6
1554	15.90	8.24	11.49	35.1	207.5
1555	15.92	8.06	11.65	44.1	192.9
1556	15.93	7.80	11.88	51.4	187.2
1557	15.95	7.44	12.20	53.2	189.1
1558	15.97	7.79	11.87	42.2	189.8
1559	15.98	8.07	11.62	33.2	189.3
1600	16.00	7.62	12.04	27.1	188.0
1601	16.02	8.36	11.44	23.4	186.0
1602	16.03	8.80	11.03	21.2	181.3
1603	16.05	7.36	12.23	22.2	174.5
1604	16.07	6.01	13.35	26.6	178.6
1605	16.08	5.91	13.39	36.8	195.0
1606	16.10	5.87	13.43	44.0	211.0
1607	16.12	6.03	13.34	47.1	217.0
1608	16.13	7.33	12.27	50.5	214.6
1609	16.15	8.49	11.32	43.6	209.4
1610	16.17	8.61	11.24	38.1	202.4
1611	16.18	8.77	11.10	32.5	196.3
1612	16.20	9.20	10.72	26.9	199.4
1613	16.22	9.09	10.80	22.4	193.5
1614	16.23	7.97	11.74	20.7	184.6
1615	16.25	7.17	12.38	21.6	187.3
1616	16.27	7.17	12.41	24.0	198.6
1617	16.28	6.90	12.55	28.1	201.0
1618	16.30	6.67	12.77	31.4	198.5
1619	16.32	6.46	12.95	33.6	205.4
1620	16.33	7.15	12.42	36.7	208.1
1621	16.35	7.08	12.45	38.9	210.2

MR1AOUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1622	16.37	7.61	12.05	42.2	210.4
1623	16.38	8.19	11.56	43.4	203.3
1624	16.40	7.66	11.99	41.9	199.0
1625	16.42	7.13	12.46	40.3	200.5
1626	16.43	7.37	12.27	33.8	208.6
1627	16.45	7.60	12.04	26.7	210.1
1628	16.47	7.10	12.47	23.4	207.1
1629	16.48	7.34	12.27	22.3	206.2
1630	16.50	7.18	12.38	22.9	207.3
1631	16.52	6.47	12.97	24.6	206.4
1632	16.53	6.27	13.13	28.1	211.6
1633	16.55	6.89	12.66	30.8	215.3
1634	16.57	7.76	11.99	31.7	216.7
1635	16.58	8.40	11.42	31.4	212.1
1636	16.60	8.07	11.69	32.4	196.8
1637	16.62	8.07	11.72	35.7	194.4
1638	16.63	8.06	11.70	37.0	200.2
1639	16.65	7.61	12.07	40.2	194.5
1640	16.67	7.77	11.94	39.6	201.7
1641	16.68	7.23	12.38	36.9	200.5
1642	16.70	6.61	12.90	31.0	200.7
1643	16.72	7.55	12.10	28.4	216.0
1644	16.73	7.76	11.88	26.8	214.9
1645	16.75	7.04	12.47	27.9	203.3
1646	16.77	7.12	12.42	28.5	207.4
1647	16.78	7.80	11.84	29.9	213.4
1648	16.80	8.08	11.64	31.9	207.6
1649	16.82	7.75	11.91	34.4	201.0
1650	16.83	7.86	11.81	36.5	199.3
1651	16.85	8.19	11.50	41.2	203.3
1652	16.87	8.65	11.08	43.1	207.2
1653	16.88	8.91	10.82	45.0	203.8
1654	16.90	8.34	11.34	45.5	202.3
1655	16.92	8.13	11.50	43.9	206.1
1656	16.93	9.10	10.61	39.6	206.4
1657	16.95	9.49	10.24	34.0	199.6
1658	16.97	8.48	11.18	29.8	188.9
1659	16.98	6.86	12.51	32.9	184.9
1700	17.00	5.62	13.53	48.3	202.0
1701	17.02	6.77	12.65	57.2	228.2
1702	17.03	7.86	11.77	47.9	229.8
1703	17.05	8.17	11.47	40.8	214.9
1704	17.07	7.55	12.01	41.7	206.7
1705	17.08	8.24	11.43	49.7	205.7
1706	17.10	8.37	11.33	52.2	204.3
1707	17.12	8.30	11.35	53.0	196.7
1708	17.13	8.91	10.82	51.1	190.1
1709	17.15	9.09	10.62	45.0	183.6
1710	17.17	8.78	10.87	37.6	180.9
1711	17.18	8.56	11.05	32.0	181.6
1712	17.20	8.70	10.91	27.2	187.3
1713	17.22	8.00	11.55	23.7	190.4
1714	17.23	7.60	11.89	24.3	191.0

MR1AOUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1715	17.25	7.61	11.82	28.5	200.0
1716	17.27	7.31	12.05	42.2	209.5
1717	17.28	8.65	10.88	58.5	219.9
1718	17.30	8.93	10.59	73.7	224.4
1719	17.32	9.69	9.90	75.8	216.8
1720	17.33	9.98	9.63	64.9	203.6
1721	17.35	8.21	11.25	61.5	184.4
1722	17.37	6.55	12.69	55.2	183.1
1723	17.38	6.10	13.06	46.8	209.4
1724	17.40	6.23	12.95	39.3	231.5
1725	17.42	7.23	12.11	31.7	241.3
1726	17.43	8.14	11.34	26.5	237.5
1727	17.45	8.68	10.86	23.0	218.3
1728	17.47	8.46	11.04	20.9	203.0
1729	17.48	8.15	11.28	20.6	195.9
1730	17.50	7.90	11.53	21.5	199.5
1731	17.52	8.53	10.93	21.7	211.4
1732	17.53	9.01	10.49	21.6	213.4
1733	17.55	9.39	10.19	20.8	201.1
1734	17.57	8.97	10.58	20.6	190.9
1735	17.58	8.21	11.30	21.0	182.0
1736	17.60	8.01	11.48	22.0	187.1
1737	17.62	6.98	12.41	22.7	196.1
1738	17.63	7.34	12.11	22.6	201.4
1739	17.65	7.37	12.11	21.9	209.0
1740	17.67	7.56	11.92	20.6	208.2
1741	17.68	7.65	11.79	20.5	212.2
1742	17.70	6.69	12.59	22.4	220.1
1743	17.72	5.93	13.24	26.6	228.5
1744	17.73	7.62	11.83	30.6	233.3
1745	17.75	9.22	10.42	30.3	230.7
1746	17.77	10.10	9.64	25.6	211.2
1747	17.78	9.58	10.13	22.6	185.9
1748	17.80	9.38	10.29	21.0	168.5
1749	17.82	9.07	10.54	20.2	168.5
1750	17.83	8.10	11.44	20.1	172.3
1751	17.85	7.43	11.98	21.0	176.4
1752	17.87	7.46	11.94	20.4	191.2
1753	17.88	6.52	12.75	18.8	198.0
1754	17.90	5.78	13.34	18.2	202.8
1755	17.92	5.57	13.50	18.1	218.2
1756	17.93	6.03	13.11	18.1	227.6
1757	17.95	6.72	12.55	18.2	239.4
1758	17.97	6.74	12.53	18.7	235.4
1759	17.98	7.09	12.22	19.7	227.1
1800	18.00	7.36	11.96	20.6	228.1
1801	18.02	7.97	11.46	20.6	222.8
1802	18.03	8.73	10.81	19.3	221.4
1803	18.05	9.15	10.44	17.8	208.3
1804	18.07	9.49	10.13	16.8	198.2
1805	18.08	9.75	9.91	15.7	195.6
1806	18.10	8.92	10.70	15.1	190.4
1807	18.12	8.14	11.39	14.7	187.9

MR1AOUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1808	18.13	8.19	11.36	14.3	196.9
1809	18.15	8.39	11.15	14.0	202.4
1810	18.17	8.68	10.92	13.8	198.2
1811	18.18	8.70	10.90	13.9	193.6
1812	18.20	8.24	11.32	14.5	186.8
1813	18.22	8.15	11.41	15.4	187.2
1814	18.23	8.47	11.18	16.7	185.9
1815	18.25	8.60	11.08	18.0	186.7
1816	18.27	8.39	11.23	19.0	185.7
1817	18.28	9.08	10.61	19.6	183.8
1818	18.30	9.34	10.34	19.4	179.3
1819	18.32	10.56	9.19	18.0	171.3
1820	18.33	12.08	7.63	15.4	168.4
1821	18.35	9.92	9.77	14.9	152.3
1822	18.37	9.08	10.56	15.3	148.6
1823	18.38	8.27	11.26	16.9	165.8
1824	18.40	7.67	11.77	20.2	182.3
1825	18.42	7.97	11.50	22.9	199.6
1826	18.43	8.49	11.00	21.9	226.8
1827	18.45	7.72	11.63	22.0	243.8
1828	18.47	7.55	11.78	22.3	243.2
1829	18.48	7.29	12.06	22.7	234.8
1830	18.50	7.47	11.91	22.1	234.4
1831	18.52	8.46	11.07	19.8	235.0
1832	18.53	9.64	10.02	17.7	222.8
1833	18.55	9.07	10.55	17.2	204.4
1834	18.57	9.57	10.07	16.6	197.3
1835	18.58	9.45	10.20	16.2	193.2
1836	18.60	9.36	10.23	16.0	183.0
1837	18.62	8.43	11.06	16.5	175.1
1838	18.63	8.21	11.25	17.3	179.9
1839	18.65	8.64	10.84	17.4	187.1
1840	18.67	9.23	10.29	16.8	188.8
1841	18.68	8.48	10.97	17.1	186.4
1842	18.70	7.77	11.55	14.1	194.1
Average=		7.97	11.58	28.36	202.72
Min=		3.98	7.63	13.10	148.60
Max=		12.08	14.71	75.80	243.80
Std Dev=		1.14	1.01	12.31	17.70
Variance=		1.30	1.01	151.55	313.24

F.3 Run 2 - Spray Dryer Inlet
Spray Dryer Outlet (Midpoint)
Baghouse Outlet

```
MR2IN
MERC RUN 2 INLET
12-10-1987
INLET
8910-L02-12
LCONE
               0         1         2         3         4
             O2       CO2        CO       THC       SO2
08:41             1.79      1.88      2.60      0.00      4.35
08:42             1.83      1.83      2.05      0.00      4.35
08:43             1.85      1.95      2.26      4.96      4.35
08:44             1.92      1.77      2.25      6.18      4.35
08:45             1.94      1.86      2.31      1.42      4.35
08:46             1.99      1.93      2.30      0.00      4.35
08:46 INIT.  ZERO
 0   O2   1.99
 1  CO2   1.93
 2   CO   2.30
 4  SO2   4.35
08:56            59.14      1.75      2.28      4.13      4.38
08:57            59.14      1.86      2.23      4.21      4.39
08:58            59.21      1.82      2.33      4.28      4.39
08:58 INIT.  SPAN
 0   O2  59.21     14.01
09:11             2.70      1.82      2.13      4.43     50.07
09:12             2.84      1.84      2.20      4.24     50.10
09:13             2.91      1.87      2.13      4.17     50.10
09:13 INIT.  SPAN
 4  SO2  50.10   413.00
09:21            18.57     81.37     52.23      5.42      4.78
09:22            18.61     81.71     51.90      4.02      4.76
09:23            18.65     81.63     51.92      4.12      4.74
09:23 INIT.  SPAN
 1  CO2  81.63     12.00
 2   CO  51.92    336.00
10:22            87.42      3.18     11.33      3.02      4.67
10:23            87.64      3.98      9.22      2.99      4.66
10:23 INIT.  ZERO
 3  THC   2.99
10:25            83.90     24.86     52.71     70.78      4.83
10:26            81.15     27.69     93.59     70.60      4.91
10:27            78.43     29.66    118.51     70.44      4.96
10:28            76.82     31.07    130.11     70.42      4.99
10:28 INIT.  SPAN
 3  THC  70.42     10.03


10:29  75.45  38.48 150.91   70.42     5.07
10:29  17.99   3.31 1356.7    10.0      6.5

10:30  73.22  38.16 180.22   70.46     5.12
10:30  17.44   3.26 1787.8    10.0      7.0

10:31  71.57  44.44 186.21   70.55     5.22
10:31  17.04   4.20 1865.8    10.0      7.8

10:32  68.07  49.80 179.87   70.65     5.38
10:32  16.18   5.08 1748.7    10.1      9.3

10:33  63.72  51.86 130.19   70.74     5.57
10:33  15.11   5.44 1066.1    10.1     11.0

10:34  61.30  55.30 104.58   70.79     5.77
10:34  14.52   6.07  777.4    10.1     12.8

10:35  58.70  58.83  76.08   70.84     6.05
10:35  13.89   6.75  505.7    10.1     15.4
```

Initial leak check
passes 9:05

```
10:36   55.91   61.84   46.81   70.86    6.44
10:36   13.20    7.36   274.4    10.1    18.8

10:37   53.88   55.73   30.24   70.90    6.49
10:37   12.70    6.15   165.1    10.1    19.3

10:38   56.83   58.06   73.34   70.98    6.51
10:38   13.43    6.60   483.2    10.1    19.5

10:39   55.08   60.33   51.56   70.99    7.11
10:39   13.00    7.06   309.7    10.1    24.9

10:40   55.60   54.41   67.93   71.05    6.90
10:40   13.13    5.91   441.6    10.1    23.0

10:41   56.01   59.35   77.14   71.10    7.30
10:41   13.23    6.86   514.2    10.1    26.6

10:42   56.33   51.05   73.79   71.20    6.83
10:42   13.31    5.30   493.7    10.1    22.3

10:43   57.78   64.48   97.11   71.26    7.42
10:43   13.66    7.92   688.9    10.2    27.7

10:44   53.01   49.79   37.70   71.14    7.23
10:44   12.49    5.08   216.9    10.1    26.0

10:45   60.20   24.91   63.83   71.11    6.42
10:45   14.25    1.66   426.7    10.1    18.7

10:46   71.25   18.90   63.38   71.08    6.00
10:46   16.96    1.09   425.3    10.1    14.5

10:47   76.61   16.94   45.10   70.92    5.70
10:47   18.27    0.93   280.6    10.1    12.2

10:48   78.85   16.21   32.03   70.75    5.50
10:48   18.82    0.87   186.7    10.1    10.4

10:49   79.81   15.76   22.38   70.49    5.35
10:49   19.05    0.84   122.1    10.0     9.0

10:50   80.21   15.65   15.73   70.12    5.23
10:50   19.15    0.83    80.0    10.0     8.0

10:51   80.33   15.44   11.89   69.43    5.16
10:51   19.18    0.81    56.6     9.9     7.3

10:52   80.45   15.35    9.96   68.33    5.10
10:52   19.21    0.81    45.0     9.7     6.8

10:53   80.48   15.59    8.58   66.39    5.05
10:53   19.22    0.83    36.8     9.4     6.3

10:54   80.14   24.28   19.12   63.43    5.08
10:54   19.14    1.59   100.5     9.0     6.6

10:55   77.40   27.79   67.77   60.47    5.11
10:55   18.46    1.97   458.7     8.5     6.9

10:56   74.74   44.21   96.74   57.66    5.30
10:56   17.81    4.16   713.4     8.1     8.5

10:57   67.21   48.17  132.58   55.00    5.56
10:57   15.97    4.80  1102.0     7.7    10.9

10:58   63.77   53.56  131.93   52.59    5.91
10:58   15.13    5.75  1083.3     7.4    14.0

10:59   60.01   53.01  104.81   50.19    6.38
10:59   14.21    5.65   783.3     7.0    18.3

11:00   59.94   50.08   95.48   48.09    6.72
11:00   14.19    5.13   693.8     6.7    21.4

11:01   61.59   47.57  105.94   45.79    6.88
11:01   14.59    4.70   802.9     6.4    22.8

11:02   62.78   46.89  116.95   43.54    6.99
11:02   14.88    4.59   922.7     6.0    23.8

11:03   63.49   47.19  115.96   41.20    7.12
```

```
11:03   15.06    4.64   911.2     5.7    25.0

11:04   63.98   45.85  116.66   38.96    7.12
11:04   15.18    4.42   921.1     5.4    25.0

11:05   64.10   47.98  121.10   36.79    7.15
11:05   15.21    4.77   967.7     5.0    25.2

11:06   62.88   52.03  117.87   34.75    7.33
11:06   14.91    5.47   924.4     4.7    26.9

11:07   60.84   50.64   98.19   32.81    7.48
11:07   14.41    5.23   719.8     4.4    28.2

11:08   60.68   55.73   98.59   30.95    8.92
11:08   14.37    6.15   716.7     4.2    41.2

11:09   58.17   57.18   73.29   29.31    8.87
11:09   13.76    6.43   483.6     3.9    40.8

11:10   55.88   62.59   52.04   27.71    8.93
11:10   13.20    7.52   311.6     3.7    41.3

11:11   52.55   61.41   26.44   26.19    8.73
11:11   12.38    7.28   139.2     3.4    39.5

11:12   52.28   65.50   27.03   24.76    8.69
11:12   12.31    8.14   141.5     3.2    39.2

11:13   49.41   65.89   15.76   23.43    8.75
11:13   11.61    8.22    74.2     3.0    39.7

11:14   48.80   68.36   13.68   22.14    8.90
11:14   11.46    8.77    62.0     2.8    41.1

11:15   46.80   68.71   10.69   20.98    9.19
11:15   10.97    8.85    45.3     2.7    43.7

11:16   45.68   71.13    9.55   19.85    9.55
11:16   10.70    9.40    38.8     2.5    46.9

11:17   43.46   72.89    8.54   18.78   10.02
11:17   10.15    9.82    33.2     2.3    51.1

11:18   41.47   76.12    7.70   17.79   10.60
11:18    9.67   10.60    28.5     2.2    56.4

11:19   38.19   77.67    6.99   16.78   11.31
11:19    8.86   10.99    24.6     2.1    62.8

11:20   36.02   80.19    6.84   15.83   12.35
11:20    8.33   11.63    23.6     1.9    72.2

11:21   33.67   80.36    6.51   14.94   12.85
11:21    7.76   11.67    21.9     1.8    76.7

11:22   32.12   82.45    6.24   14.09   13.27
11:22    7.38   12.22    20.4     1.7    80.5

11:23   30.11   81.72    6.10   13.28   13.51
11:23    6.89   12.02    19.7     1.5    82.6

11:24   31.33   80.83    6.15   12.53   13.14
11:24    7.18   11.79    20.0     1.4    79.4

11:25   31.26   82.34    6.59   11.79   13.15
11:25    7.17   12.19    22.2     1.3    79.4

11:26   29.70   83.98    6.62   11.11   13.45
11:26    6.79   12.63    22.2     1.2    82.1

11:27   27.89   84.37    6.80   10.41   13.75
11:27    6.34   12.73    23.1     1.1    84.8

11:28   27.14   85.46    6.96    9.78   14.17
11:28    6.16   13.03    23.9     1.0    88.7

11:29   25.26   86.77    6.71    9.15   15.06
11:29    5.70   13.39    22.5     0.9    96.7

11:30   23.80   84.01    6.55    8.57   15.22
```

```
11:31   29.84   81.98    9.07    7.99   13.95
11:31    6.82   12.09    35.2     0.7    86.6

11:32   32.16   81.51   11.22    7.43   13.23
11:32    7.39   11.97    46.6     0.7    80.1

11:33   33.70   81.12   11.10    6.95   12.69
11:33    7.77   11.87    46.0     0.6    75.2

11:34   33.48   82.46   10.47    6.49   12.48
11:34    7.71   12.22    42.5     0.5    73.4

11:35   32.05   84.96   11.28    6.01   12.59
11:35    7.36   12.89    46.4     0.4    74.4

11:36   27.17   87.94   12.06    5.54   13.52
11:36    6.17   13.71    50.1     0.4    82.8

11:37   24.86   87.20   10.18    5.09   13.73
11:37    5.60   13.50    40.4     0.3    84.7

11:38   24.37   88.01    9.08    4.67   13.90
11:38    5.48   13.73    34.5     0.2    86.2

11:39   24.23   88.23    8.82    4.23   13.18
11:39    5.45   13.79    33.2     0.2    79.7

11:40   23.23   88.37    9.26    3.86   12.90
11:40    5.20   13.83    35.4     0.1    77.2

11:41   23.47   87.41    6.97    3.52   12.28
11:41    5.26   13.56    34.1     0.1    71.6

11:42   24.49   86.73    8.85    3.14   10.85
11:42    5.51   13.38    33.5     0.0    58.7

11:43   24.90   87.76    9.22    2.77   11.15
11:43    5.61   13.66    35.3    -0.0    61.4

11:44   25.56   86.07    8.73    2.42   11.25
11:44    5.77   13.19    32.9    -0.1    62.2

11:45   25.76   85.96    9.71    2.29   11.40
11:45    5.82   13.16    38.1    -0.1    63.6

11:46   27.27   83.90    8.48    2.30   11.01
11:46    6.19   12.60    31.9    -0.1    60.1

11:47   29.50   84.66    7.77    2.31   11.08
11:47    6.74   12.81    28.1    -0.1    60.7

11:48   28.32   82.41    8.10    2.27   11.36
11:48    6.45   12.21    30.0    -0.1    63.3

11:49   31.25   90.03   36.07    2.22   13.18
11:49    7.16   14.30   185.8    -0.1    79.7

11:50   19.51   89.91  182.53    2.21   18.19
11:50    4.29   14.27  1617.0    -0.1   124.9

11:51   21.98   85.42   44.11    2.23   14.56
11:51    4.89   13.01   239.9    -0.1    92.1

11:52   29.26   77.25   14.20    2.25   12.76
11:52    6.68   10.88    63.5    -0.1    75.9

11:53   37.52   78.54   13.86    2.21   12.28
11:53    8.70   11.20    61.3    -0.1    71.6

11:54   35.45   80.75   12.47    2.18   12.03
11:54    8.19   11.77    53.4    -0.1    69.3

11:55   34.16   80.99   11.35    2.14   12.38
11:55    7.88   11.83    47.4    -0.1    72.4

11:56   34.97   79.10   11.48    2.17   11.89
11:56    8.08   11.35    48.3    -0.1    68.0

11:57   35.19   80.92   11.53    2.18   11.95
11:57    8.13   11.81    48.3    -0.1    68.6
```

```
11:58   33.69   82.12   11.21    2.12   12.17
11:58    7.76   12.13    46.5    -0.1    70.6

11:59   32.48   80.42   11.60    2.11   12.79
11:59    7.47   11.69    48.8    -0.1    76.1

12:00   34.76   79.51   11.90    2.10   12.25
12:00    8.03   11.45    50.6    -0.1    71.3

12:01   34.93   79.38   12.44    2.16   11.92
12:01    8.07   11.42    53.5    -0.1    68.3

12:02   37.15   75.83   14.42    2.09   10.80
12:02    8.61   10.53    64.9    -0.1    58.2

12:03   39.58   77.39   16.12   14.24   11.38
12:03    9.21   10.91    74.1     1.7    63.5

12:04   37.40   79.39   15.62   14.13   11.78
12:04    8.67   11.42    70.8     1.7    67.0

12:05   36.02   78.49   14.55   43.17   11.11
12:05    8.33   11.19    65.1     6.0    61.0

12:06   36.55   76.06   15.01   78.01   11.76
12:06    8.46   10.58    68.1    11.2    66.9
12:14           45.04   73.75   19.78   68.56   11.64
12:15           43.60   76.01   18.25   68.32   11.49
12:16           40.07   77.96   15.21   67.90   11.63
12:16 INIT. SPAN
 3  THC  67.90    10.03


12:17   38.80   79.24   14.92   67.32   11.89
12:17    9.01   11.38    67.0     9.9    68.1

12:18   37.83   76.59   14.46   66.93   11.75
12:18    8.78   10.72    65.0     9.9    66.8

12:19   39.07   76.88   14.78   66.72   10.86
12:19    9.08   10.79    66.7     9.8    58.7

12:20   39.53   77.24   15.22   66.72    9.99
12:20    9.19   10.88    69.1     9.8    50.9

12:21   38.93   77.77   14.54   66.60   10.23
12:21    9.05   11.01    65.2     9.8    53.1

12:22   38.54   78.42   14.40   66.41   10.40
12:22    8.95   11.17    64.3     9.8    54.6

12:23   37.99   77.78   14.70   66.24   10.20
12:23    8.81   11.01    66.1     9.8    52.8

12:24   38.19   77.70   14.55   66.07   10.68
12:24    8.86   10.39    65.3     9.7    57.2

12:25   38.80   76.99   14.80   71.22   10.82
12:25    9.01   10.82    66.8    10.5    58.4

12:26   39.13   77.94   15.90   70.85   11.10
12:26    9.10   11.05    72.7    10.5    60.9

12:27   38.58   77.96   16.07   70.17   11.32
12:27    8.96   11.06    73.7    10.4    62.9

12:28   38.25   78.05   15.38   19.83   11.55
12:28    8.88   11.08    69.8     2.6    64.9

12:29   38.32   78.41   14.99   15.37   11.24
12:29    8.90   11.17    67.6     1.9    62.2

12:30   37.65   79.16   15.47   18.58   10.66
12:30    8.73   11.37    70.1     2.4    56.9

12:31   36.46   81.28   14.69   15.10   10.82
12:31    8.44   11.91    65.4     1.9    58.4

12:32   35.73   77.45   15.12   15.15   11.09
12:32    8.26   10.93    68.9     1.9    60.8
```

```
12:33  37.82  78.19  16.17  16.04  11.90
12:33   8.77  11.12   74.2    2.0   68.2

12:34  38.16  78.90  15.83  16.87  12.03
12:34   8.86  11.30   72.1    2.1   69.3

12:35  37.74  76.58  15.72  16.55  12.02
12:35   8.75  10.71   72.0    2.1   69.2

12:36  39.32  77.55  17.35  16.19  12.03
12:36   9.14  10.96   80.9    2.0   69.3

12:37  39.23  77.22  17.11  15.78  12.23
12:37   9.12  10.87   79.7    2.0   71.1

12:38  38.99  78.18  16.84  15.32  12.53
12:38   9.06  11.11   77.9    1.9   73.8

12:39  38.55  78.38  16.18  15.15  12.56
12:39   8.95  11.16   74.2    1.9   74.1

12:40  38.19  76.95  15.81  14.95  12.51
12:40   8.87  10.80   72.4    1.8   73.7

12:41  39.76  75.53  17.13  14.95  12.25
12:41   9.25  10.45   80.1    1.8   71.3

12:42  40.57  77.60  17.46  14.85  12.61
12:42   9.45  10.97   81.5    1.8   74.5

12:43  38.83  79.96  15.54  13.08  12.70
12:43   9.02  11.57   70.3    1.6   75.4

12:44  37.14  79.12  14.85  14.85  12.95
12:44   8.61  11.35   66.7    1.8   77.6

12:45  36.77  80.05  15.30  14.99  11.45
12:45   8.52  11.59   69.0    1.9   64.1

12:46  36.22  80.51  15.34  14.99  11.29
12:46   8.38  11.71   69.1    1.9   62.6

12:47  35.40  80.00  14.59  15.06  11.65
12:47   8.18  11.58   65.1    1.9   65.9

12:48  36.19  78.71  15.36  15.05  11.32
12:48   8.38  11.25   69.5    1.9   62.9

12:49  37.24  77.32  14.93  15.04  11.31
12:49   8.63  10.90   67.4    1.9   62.8

12:50  38.67  74.95  15.22  15.15  11.27
12:50   8.98  10.31   69.5    1.9   62.5

12:51  41.19  72.23  16.46  15.15  10.93
12:51   9.60   9.66   77.0    1.9   59.4

12:52  43.41  72.42  17.65  15.02  10.90
12:52  10.14   9.71   83.8    1.9   59.1

12:53  43.81  73.90  17.22  14.98  11.13
12:53  10.24  10.06   81.0    1.9   61.2

12:54  42.98  74.07  16.97  15.06  10.97
12:54  10.04  10.10   79.5    1.9   59.8

12:55  42.78  75.62  16.37  14.95  11.74
12:55   9.99  10.48   75.8    1.8   66.7

12:56  40.85  77.95  15.64  14.88  12.60
12:56   9.51  11.06   71.3    1.8   74.5

12:57  38.63  79.37  14.79  14.79  13.00
12:57   8.97  11.41   66.3    1.8   78.1

12:58  36.75  80.66  13.49  14.80  13.41
12:58   8.51  11.75   58.9    1.8   81.8

12:59  34.93  81.23  12.95  14.73  13.67
12:59   8.07  11.90   55.9    1.8   84.1
```

START 1245

13:00	34.02	82.10	13.45	14.59	13.76
13:00	7.84	12.12	58.5	1.8	84.9
13:01	33.13	81.13	13.28	14.39	12.30
13:01	7.63	11.87	57.8	1.8	71.8
13:02	33.88	79.74	13.46	14.22	12.42
13:02	7.81	11.51	58.9	1.7	72.8
13:03	3[illegible]25	80.29	13.66	14.07	12.65
13:03	8.14	11.65	60.0	1.7	74.9
13:04	35.12	79.65	13.49	14.16	12.85
13:04	8.11	11.49	59.1	1.7	76.7
13:05	36.06	77.11	13.84	14.21	11.96
13:05	8.34	10.84	61.5	1.7	68.7
13:06	37.87	79.53	14.93	14.19	12.49
13:06	8.79	11.46	67.0	1.7	73.5
13:07	36.35	82.14	13.96	14.18	13.27
13:07	8.41	12.14	61.3	1.7	80.5
13:08	33.58	82.00	13.25	14.15	13.87
13:08	7.74	12.10	57.4	1.7	85.9
13:09	32.95	81.95	13.10	14.14	14.37
13:09	7.58	12.09	56.6	1.7	90.5
13:10	33.11	81.17	12.77	14.10	14.71
13:10	7.62	11.88	55.0	1.7	93.5
13:11	33.58	81.03	13.29	14.04	14.60
13:11	7.73	11.85	57.8	1.7	92.6
13:12	33.93	81.40	13.34	14.07	14.42
13:12	7.82	11.94	58.0	1.7	90.9
13:13	33.66	80.77	12.55	13.93	14.30
13:13	7.75	11.78	53.8	1.7	89.8
13:14	34.37	80.52	12.76	13.94	14.15
13:14	7.93	11.71	55.0	1.7	88.5
13:15	34.36	80.95	12.75	13.91	14.19
13:15	7.93	11.82	54.9	1.7	88.8
13:16	34.40	78.74	12.20	13.92	13.91
13:16	7.94	11.25	52.2	1.7	86.3
13:17	36.88	76.33	13.16	13.92	12.61
13:17	8.54	10.65	57.9	1.7	74.6
13:18	38.60	78.11	13.46	13.87	12.23
13:18	8.96	11.10	59.2	1.7	71.2
13:19	38.60	76.02	12.91	13.83	11.98
13:19	8.96	10.57	56.5	1.7	68.9
13:20	39.53	77.01	12.94	13.90	11.85
13:20	9.19	10.82	56.6	1.7	67.7
13:21	39.34	77.32	13.06	14.03	12.24
13:21	9.15	10.90	57.2	1.7	71.2
13:22	38.88	77.06	12.29	14.03	12.50
13:22	9.03	10.83	53.0	1.7	73.5
13:23	39.36	76.93	12.38	14.02	12.56
13:23	9.15	10.80	53.5	1.7	74.1
13:24	39.17	78.12	13.29	14.00	12.85
13:24	9.10	11.10	58.3	1.7	76.7
13:25	37.77	80.85	12.95	13.97	13.29
13:25	8.76	11.80	56.0	1.7	80.7
13:26	35.52	80.98	12.54	13.97	13.59
13:26	8.21	11.83	53.7	1.7	83.4
13:27	34.46	82.12	13.37	13.99	13.95
13:27	7.95	12.13	58.1	1.7	86.6
13:28	33.70	80.83	13.70	13.94	13.86
13:28	7.77	11.79	60.1	1.7	85.9
13:29	34.01	83.03	13.42	13.99	14.05
13:29	7.84	12.37	58.2	1.7	87.6
13:30	32.61	81.97	14.72	13.97	13.84
13:30	7.50	12.09	65.4	1.7	85.6
13:31	32.73	81.76	14.54	13.79	13.95
13:31	7.53	12.04	64.5	1.7	86.7
13:32	33.06	82.90	13.92	13.88	14.18
13:32	7.61	12.34	60.9	1.7	88.7
13:33	32.33	80.87	13.27	13.84	14.39
13:33	7.43	11.80	57.7	1.7	90.7
13:34	34.45	78.46	14.17	13.84	13.70
13:34	7.95	11.13	63.1	1.7	84.4
13:35	36.71	79.18	14.68	13.94	13.48
13:35	8.50	11.37	65.7	1.7	82.5
13:36	36.45	80.76	14.77	13.93	13.80
13:36	8.44	11.77	65.9	1.7	85.3
13:37	34.70	80.50	13.73	13.94	14.51
13:37	8.01	11.71	60.3	1.7	91.7
13:38	35.38	78.65	14.43	13.90	14.15
13:38	8.18	11.23	64.5	1.7	88.4
13:39	37.07	77.22	15.40	14.00	13.90
13:39	8.59	10.87	70.1	1.7	86.2
13:40	38.24	77.74	15.51	14.03	13.76
13:40	8.88	11.00	70.6	1.7	84.9
13:41	38.48	75.57	14.93	13.96	13.27
13:41	8.93	10.46	67.8	1.7	80.5
13:42	40.45	75.68	15.10	13.90	12.76
13:42	9.42	10.49	74.3	1.7	75.9
13:43	40.68	76.48	15.20	13.90	12.59
13:43	9.47	10.69	69.1	1.7	74.4
13:44	39.86	78.06	13.79	14.05	12.64
13:44	9.27	11.08	61.1	1.7	74.8
13:45	38.33	79.93	13.22	14.15	13.02
13:45	8.90	11.56	57.6	1.7	78.3
13:46	36.63	78.62	12.98	12.73	12.94
13:46	8.48	11.23	56.5	1.5	77.6
13:47	37.25	78.22	14.18	13.86	13.03
13:47	8.63	11.12	63.2	1.7	78.3
13:48	37.27	80.15	14.51	13.85	13.23
13:48	8.64	11.62	64.6	1.7	80.1
13:49	36.08	80.69	14.29	13.95	13.52
13:49	8.35	11.76	63.3	1.7	82.8
13:50	35.00	79.23	14.03	14.01	13.43
13:50	8.08	11.38	62.1	1.7	82.0
13:51	36.24	77.90	14.62	14.22	13.01
13:51	8.39	11.04	65.6	1.7	78.2
13:52	37.88	77.53	15.28	14.33	12.62
13:52	8.79	10.95	69.3	1.8	74.7
13:53	38.34	78.30	15.53	14.36	12.57
13:53	8.90	11.14	70.6	1.8	74.2
13:54	38.41	76.74	16.01	14.33	12.36
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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[illegible]
13:55   38.96   78.30   16.03   14.32   11.93
13:55    9.05   11.14    73.4     1.8    68.5

13:56   37.87   79.01   15.84   14.40   11.88
13:56    8.79   11.32    72.2     1.8    67.9

13:57   37.19   80.55   16.41   14.55   12.03
13:57    8.62   11.72    75.0     1.8    69.4

13:58   35.30   80.25   16.53   14.72   12.43
13:58    8.16   11.64    75.7     1.8    73.0

13:59   35.02   82.45   15.83   14.76   12.80
13:59    8.09   12.22    71.4     1.8    76.3

14:00   33.05   82.95   15.70   14.66   13.24
14:00    7.61   12.35    70.6     1.8    80.3

14:01   31.80   84.55   14.65   14.58   13.64
14:01    7.30   12.78    64.5     1.8    83.9

14:02   30.35   82.29   14.59   14.60   13.59
14:02    6.94   12.17    64.6     1.8    83.4

14:03   32.88   77.59   15.57   14.58   12.82
14:03    7.56   10.97    70.9     1.8    76.5

14:04   37.00   77.62   16.29   14.57   12.33
14:04    8.57   10.97    75.0     1.8    72.0

14:05   38.27   76.65   16.12   14.52   12.24
14:05    8.88   10.73    74.2     1.8    71.2

14:06   39.38   78.06   16.60   14.36   12.34
14:06    9.16   11.08    76.6     1.8    72.1

14:07   37.21   80.92   14.92   14.52   12.61
14:07    8.62   11.82    66.7     1.8    74.5

14:08   35.73   79.34   14.39   14.53   12.64
14:08    8.26   11.41    64.1     1.8    74.8

14:09   36.24   78.81   14.52   14.64   12.64
14:09    8.39   11.27    64.9     1.8    74.8

14:10   36.92   78.51   14.73   14.74   12.65
14:10    8.55   11.20    66.1     1.8    74.9

14:11   37.28   79.30   14.77   14.67   12.53
14:11    8.64   11.40    66.2     1.8    73.8

14:12   36.85   78.77   14.21   14.62   12.43
14:12    8.54   11.26    63.2     1.8    72.9

14:13   37.29   77.55   14.56   14.60   12.10
14:13    8.64   10.96    65.3     1.8    69.9

14:14   38.33   76.03   14.91   14.63   11.75
14:14    8.90   10.58    67.6     1.8    66.8

14:15   40.05   75.49   16.51   14.53   11.32      Port change
14:15    9.32   10.44    76.6     1.8    62.9

14:16   41.05   64.05   16.98   14.31   10.27
14:16    9.56    7.83    81.6     1.7    53.4

14:17   49.28   71.76   12.53   14.13    8.63
14:17   11.58    9.55    55.1     1.7    38.6

14:18   46.81   70.49   17.91   12.33    8.09
14:18   10.97    9.26    85.7     1.4    33.7

14:19   48.02   58.73   38.26   14.18    7.75
14:19   11.27    6.73   216.9     1.7    30.6

14:20   54.75   59.18   80.46   14.37    9.52
14:20   12.92    6.82   543.3     1.8    46.7

14:21   56.38   68.21   88.72   14.46    8.87
14:21   13.32    8.74   605.1     1.8    40.8

14:22   40.?9   83.61   56.49   14.55    8.06
14:22   11.34   12.53   326.0     1.8    33.5

14:23   36.30   82.70   24.69   14.50    7.41
14:23    8.40   12.28   121.4     1.8    27.6

14:24   34.19   79.98   19.15   14.38    6.84
14:24    7.88   11.57    90.5     1.8    22.5

14:25   34.99   81.68   18.38   14.29    6.44
14:25    8.08   12.01    85.7     1.7    18.9

14:26   34.14   81.82   17.86   14.75    6.20
14:26    7.87   12.05    82.7     1.8    16.7

14:27   33.90   80.70   17.26   14.10    6.00
14:27    7.81   11.76    79.7     1.7    14.9

14:28   34.86   80.61   16.12   11.81    5.30
14:28    8.05   11.73    73.4     1.4     8.5

14:29   35.42   78.15   15.58   14.42    5.80      Restart
14:29    8.19   11.10    70.9     1.8    13.0        1430

14:30   37.71   76.96   16.21   14.66    5.92
14:30    8.75   10.81    74.6     1.8    14.2

14:31   39.51   75.99   16.15   14.64    6.15
14:31    9.19   10.57    74.5     1.8    16.2

14:32   40.55   75.94   16.50   14.52    6.46
14:32    9.44   10.55    76.5     1.8    19.1

14:33   40.72   77.11   16.68   14.50    7.49
14:33    9.48   10.85    77.3     1.8    28.3

14:34   39.65   79.66   15.89   14.72    8.52
14:34    9.22   11.49    72.3     1.8    37.6

14:35   37.31   78.31   14.32   14.95    9.15
14:35    8.65   11.15    63.9     1.8    43.3

14:36   37.76   78.42   15.36   15.00    9.55
14:36    8.76   11.17    69.6     1.9    46.9

14:37   37.33   79.88   14.73   13.87    9.53
14:37    8.65   11.55    65.9     1.7    46.7

14:38   36.61   79.33   14.19   14.69    9.95
14:38    8.48   11.41    63.0     1.8    50.5

14:39   36.62   80.61   14.71   18.04   10.20
14:39    8.48   11.73    65.6     2.3    52.8

14:40   35.57   80.85   13.79   14.65   10.49
14:40    8.22   11.80    60.5     1.8    55.4

14:41   34.56   81.38   13.15   14.83   10.75
14:41    7.98   11.93    57.0     1.8    57.8

14:42   34.41   80.79   14.19   14.78   11.07
14:42    7.94   11.78    62.8     1.8    60.6

14:43   34.39   82.12   14.90   14.50   11.81
14:43    7.93   12.13    66.3     1.8    67.4

14:44   33.09   83.21   14.48   14.63   11.65
14:44    7.62   12.42    63.9     1.8    65.9

14:45   31.86   84.82   13.67   13.55   12.25
14:45    7.32   12.85    59.2     1.6    71.3

14:46   30.03   83.56   13.14   14.38   12.29
14:46    6.87   12.51    56.5     1.8    71.7

14:47   30.74   82.86   12.21   13.64   11.51
14:47    7.04   12.33    51.7     1.6    64.6

14:48   31.04   79.28   10.76   12.77   11.38
14:48    7.11   11.39    44.4     1.5    63.4

14:49   34.21   77.09   11.45   14.58   10.78
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```
14:49    7.89   10.84   48.5    1.8   58.0

14:50   36.50   77.75   10.99  12.80  10.51
14:50    8.45   11.00   45.9    1.5   55.6

14:51   37.55   71.69   11.65  14.55  10.19
14:51    8.71    9.53   50.2    1.8   52.7

14:52   41.79   72.63   13.23  14.45   9.84
14:52    9.74    9.75   58.8    1.8   49.5

14:53   42.11   74.31   12.13  13.18   9.37
14:53    9.82   10.16   52.5    1.6   45.3

14:54   41.53   74.38   12.78  14.56   9.90
14:54    9.68   10.17   56.1    1.8   50.1

14:55   40.67   74.59   12.30  13.65   9.87
14:55    9.47   10.22   53.4    1.6   49.8

14:56   41.65   73.01   15.12  14.60   9.78
14:56    9.71    9.84   69.3    1.8   49.0

14:57   43.20   74.34   16.30  14.73   9.70
14:57   10.09   10.16   75.7    1.8   48.3

14:58   42.20   77.53   16.37  11.61   9.73
14:58    9.85   10.95   75.4    1.3   48.5

14:59   39.96   76.67   15.98  13.13   9.67
14:59    9.30   10.73   73.4    1.6   48.0

15:00   39.82   77.70   16.83  14.55  10.13
15:00    9.26   10.99   78.0    1.8   52.1

15:01   38.67   80.23   16.67  14.72  10.63
15:01    8.98   11.64   76.5    1.8   56.7

15:02   36.03   83.15   16.05  14.68  10.92
15:02    8.34   12.40   72.5    1.8   59.3

15:03   32.78   84.22   16.87  14.73  11.84
15:03    7.54   12.69   76.7    1.8   67.6

15:04   31.12   82.56   16.31  14.47  12.16
15:04    7.13   12.25   74.0    1.8   70.5

15:05   32.25   80.82   14.84  14.00  11.52
15:05    7.41   11.79   66.3    1.7   64.8

15:06   34.12   78.93   15.04  14.35  11.29
15:06    7.87   11.30   67.8    1.8   62.6

15:07   36.58   76.31   15.65  14.15  10.80
15:07    8.47   10.65   71.6    1.7   58.2

15:08   39.05   76.16   16.24  14.33  10.41
15:08    9.07   10.61   75.0    1.8   54.7

15:09   39.82   77.98   16.28  14.31  10.26
15:09    9.26   11.06   74.8    1.7   53.4

15:10   38.88   77.97   15.13  14.23  10.39
15:10    9.03   11.06   68.5    1.7   54.5

15:11   38.75   76.37   14.71  14.34  10.27
15:11    9.00   10.66   66.4    1.8   53.4

15:12   39.54   79.00   15.06  14.35   9.74
15:12    9.19   11.32   67.8    1.8   48.7

15:13   37.76   79.11   13.60  14.31  10.53
15:13    8.76   11.35   59.8    1.7   55.8

15:14   37.30   78.87   13.18  14.52  10.52
15:14    8.65   11.29   57.6    1.8   55.7

15:15   37.13   80.65   13.02  13.88  10.23
15:15    8.60   11.74   56.4    1.7   53.0

15:16   35.96   79.42   12.91  14.30  10.76

15:17   36.51   78.25   13.13  14.70  10.67
15:17    8.45   11.13   57.4    1.8   57.1

15:18   37.59   78.77   13.87  14.67  10.43
15:18    8.72   11.26   61.3    1.8   54.8

15:19   37.51   79.98   13.63  14.61  10.59
15:19    8.70   11.57   59.8    1.8   56.3

15:20   36.45   80.05   13.11  14.56  10.81
15:20    8.44   11.59   57.0    1.8   58.3

15:21   36.07   78.67   13.16  14.51  10.87
15:21    8.35   11.24   57.5    1.8   58.9

15:22   36.60   82.11   13.80  14.51  10.74
15:22    8.48   12.13   60.4    1.8   57.7

15:23   34.50   80.26   12.83  14.53  11.37
15:23    7.96   11.64   55.4    1.8   63.3

15:24   34.97   80.96   13.59  14.60  11.44
15:24    8.07   11.83   59.4    1.8   64.0

15:25   35.20   79.76   13.87  14.82  11.21
15:25    8.13   11.52   61.2    1.8   61.9

15:26   35.99   79.15   14.00  15.00  10.85
15:26    8.33   11.36   62.0    1.9   58.7

15:27   36.84   78.59   14.64  14.91  10.14
15:27    8.53   11.22   65.6    1.8   52.2

15:28   36.99   79.87   14.95  14.86  10.54
15:28    8.57   11.54   67.1    1.8   55.9

15:29   35.98   80.99   14.35  14.85  10.73
15:29    6.32   11.83   63.6    1.8   57.6

15:30   34.85   82.41   14.30  15.03  10.24
15:30    8.05   12.21   63.0    1.9   53.2

15:31   33.01   83.59   13.98  14.95  11.05
15:31    7.60   12.52   61.1    1.8   60.5

15:32   31.75   82.48   13.49  14.90  11.32
15:32    7.29   12.23   58.6    1.8   62.9

15:33   32.55   81.53   13.50  14.99  11.15
15:33    7.48   11.98   58.9    1.9   61.4

15:34   33.26   80.96   13.31  15.15  11.16
15:34    7.66   11.82   57.9    1.9   61.4

15:35   34.54   78.82   13.64  15.63  10.73
15:35    7.97   11.27   60.1    2.0   57.6

15:36   36.37   78.17   13.97  16.62  10.68
15:36    8.42   11.11   62.0    2.1   57.1

15:37   38.08   75.41   14.70  17.30   9.99
15:37    8.84   10.42   66.5    2.2   50.9

15:38   40.18   75.48   14.83  17.53   9.76
15:38    9.35   10.44   67.2    2.2   48.8

15:39   41.15   74.63   15.44  17.25   9.65
15:39    9.59   10.23   70.8    2.2   47.8

15:40   41.34   77.14   15.32  17.15   9.65
15:40    9.64   10.85   69.7    2.2   47.9

15:41   39.14   79.67   13.99  17.21   9.88
15:41    9.10   11.49   61.9    2.2   49.9.

15:42   37.56   77.35   14.23  17.63   9.79
15:42    8.71   10.90   63.6    2.3   49.1

15:43   38.00   80.12   14.02  17.51   9.51
15:43    8.82   11.61   62.0    2.2   46.6
```

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15:44   35.88   80.49   13.14   17.01   10.13
15:44    8.30   11.70    57.1     2.2    52.2

15:45   34.86   81.67   13.37   16.77   10.50
15:45    8.05   12.01    58.1     2.1    55.5

15:46   33.41   82.03   13.51   16.46   11.26
15:46    7.69   12.11    58.8     2.1    62.4

15:47   33.44   81.13   13.48   16.38   11.16
15:47    7.70   11.87    58.8     2.1    61.5

15:48   34.18   81.13   13.36   16.48   10.83
15:48    7.88   11.87    58.2     2.1    58.5

15:49   33.75   82.30   13.57   16.60   10.66
15:49    7.78   12.18    59.1     2.1    56.9

15:50   32.99   82.79   13.12   16.80   10.36
15:50    7.59   12.31    56.6     2.1    54.2

15:51   31.79   83.95   13.25   16.96   10.50
15:51    7.30   12.62    57.1     2.2    55.5

15:52   30.53   83.07   13.17   16.82   10.83
15:52    6.99   12.38    56.8     2.1    58.5

15:53   31.10   82.92   13.08   17.10   10.95
15:53    7.13   12.34    56.3     2.2    59.6

15:54   31.72   80.90   13.16   17.37   10.78
15:54    7.28   11.81    57.1     2.2    58.0

15:55   33.30   82.31   13.67   16.92   10.63
15:55    7.67   12.18    59.6     2.2    56.7

15:56   32.89   80.91   12.79   16.63    9.96
15:56    7.57   11.81    55.1     2.1    50.6

15:57   34.84   76.57   13.29   16.39    8.35
15:57    8.04   10.71    58.5     2.1    36.1

15:58   38.28   75.65   15.21   16.43    8.78
15:58    8.89   10.48    69.3     2.1    40.0

15:59   40.75   72.56   16.24   16.73    9.66
15:59    9.49    9.74    75.7     2.1    47.9

16:00   42.90   73.77   16.79   16.73    9.11
16:00   10.02   10.03    78.6     2.1    42.9

16:01   42.42   75.63   15.59   16.80    9.08
16:01    9.90   10.48    71.4     2.1    42.7

16:02   41.00   76.06   14.94   16.89    9.22
16:02    9.55   10.58    67.8     2.1    43.9

16:03   39.83   78.18   14.42   16.93    9.31
16:03    9.27   11.11    64.5     2.2    44.7

16:04   38.39   77.79   13.87   16.86    9.50
16:04    8.91   11.02    61.5     2.1    46.4

16:05   37.25   81.03   12.78   16.75    9.75
16:05    8.63   11.84    55.1     2.1    48.7

16:06   36.75   52.73   11.99   16.85    8.44
16:06    8.51    5.60    54.4     2.1    36.9

16:07   51.82   80.57    9.17   16.91    8.79
16:07   12.20   11.72    35.8     2.2    40.1

16:08   38.84   82.18   12.25   17.27    9.80
16:08    9.02   12.15    52.0     2.2    49.2

16:09   34.70   79.16   13.04   17.45    9.97
16:09    8.01   11.36    56.8     2.2    50.7

16:10   36.16   78.46   13.85   17.19   10.06
16:10    8.37   11.18    61.3     2.2    51.5

16:11   36.52   80.26   13.38   16.96   10.14
```

```
16:11    8.46   11.64    58.4     2.2    52.3

16:12   35.35   79.22   13.14   16.86   10.04
16:12    8.17   11.38    57.3     2.1    51.4

16:13   35.61   79.33   13.45   16.65    9.70
16:13    8.23   11.41    59.0     2.1    48.3

16:14   36.08   79.35   13.58   16.47    9.64
16:14    8.35   11.41    59.7     2.1    47.7

16:15   36.75   76.70   14.51   16.37    9.48
16:15    8.51   10.74    65.2     2.1    46.3

16:16   38.90   75.34   14.98   16.33    9.22
16:16    9.04   10.41    68.1     2.1    43.9

16:17   40.42   75.75   15.20   16.59    9.10
16:17    9.41   10.51    69.2     2.1    42.9

16:18   39.97   77.04   15.57   16.41    9.10
16:18    9.30   10.83    71.1     2.1    42.9

16:19   38.93   77.89   14.96   16.18    9.11
16:19    9.04   11.04    67.5     2.0    43.0

16:20   38.28   79.00   14.44   16.04    9.17
16:20    8.89   11.32    64.4     2.0    43.5

16:21   36.03   80.72   13.85   15.91    9.44
16:21    8.34   11.76    60.9     2.0    46.0

16:22   34.70   81.08   13.31   15.88    9.50
16:22    8.01   11.86    57.9     2.0    46.5

16:23   34.30   81.10   12.65   15.86    9.47
16:23    7.91   11.86    54.3     2.0    46.2

16:24   33.28   82.77   12.54   15.93    9.05
16:24    7.66   12.30    53.5     2.0    42.4

16:25   32.03   81.94   12.46   16.01    8.92
16:25    7.36   12.08    53.2     2.0    41.3

16:26   32.81   81.05   12.20   16.10    8.97
16:26    7.55   11.85    51.9     2.0    41.7

16:27   34.18   76.84   13.42   16.17    8.87
16:27    7.88   10.78    59.2     2.0    40.8

16:28   38.55   75.44   15.85   16.18    8.57
16:28    8.95   10.43    72.9     2.0    38.1

16:29   39.79   75.98   14.93   16.26    8.45
16:29    9.26   10.57    67.7     2.0    37.0

16:30   40.25   75.29   15.79   16.36    8.10
16:30    9.37   10.40    72.7     2.1    33.9

16:31   40.50   77.14   16.46   16.41    8.46
16:31    9.43   10.85    76.0     2.1    37.1

16:32   38.86   79.26   15.31   16.42    8.61
16:32    9.03   11.39    69.2     2.1    38.4

16:33   37.00   79.61   15.22   16.21    8.69
16:33    8.57   11.48    68.6     2.0    39.1

16:34   35.95   80.28   15.31   16.27    8.86
16:34    8.31   11.65    69.0     2.1    40.7

16:35   35.20   79.53   14.92   16.26    8.93
16:35    8.13   11.46    67.0     2.1    41.3

16:36   35.98   79.69   15.47   16.10    8.84
16:36    8.32   11.50    70.0     2.0    40.5

16:37   35.83   78.47   15.72   16.12    8.79
16:37    8.29   11.19    71.6     2.0    40.0

16:38   37.17   77.53   15.15   16.44    8.55
```

```
16:38    8.61  10.95   68.7    2.1   37.9

16:39   37.31  80.01  15.48  16.13   8.63
16:39    8.65  11.58   69.9    2.0   38.6

16:40   35.20  81.24  14.81  16.33   8.85
16:40    8.13  11.90   66.0    2.1   40.6

16:41   33.37  84.08  14.53  16.37   8.82
16:41    7.68  12.65   64.0    2.1   40.3

16:42   30.89  82.07  15.06  16.86   9.08
16:42    7.08  12.12   67.2    2.1   42.7

16:43   31.41  83.23  15.26  16.45   9.29
16:43    7.20  12.43   68.1    2.1   44.6

16:44   31.16  82.65  14.37  16.45   9.29
16:44    7.14  12.27   63.4    2.1   44.6

16:45   32.05  79.59  14.24  16.57   9.06
16:45    7.36  11.47   63.2    2.1   42.5

16:46   34.77  79.75  15.14  16.57   8.73
16:46    8.03  11.51   68.2    2.1   39.5

16:47   35.26  79.52  14.38  16.42   8.44
16:47    8.15  11.45   64.0    2.1   36.9

16:48   35.84  77.23  13.98  16.19   8.17
16:48    8.29  10.88   62.2    2.0   34.5

16:49   39.19  69.26  15.76  16.05   7.83
16:49    9.11   8.97   73.6    2.0   31.4

16:50   45.77  70.36  19.56  15.97   7.68
16:50   10.72   9.22   95.3    2.0   30.1

16:51   44.66  75.22  16.92  15.85   7.83
16:51   10.45  10.38   79.0    2.0   31.4

16:52   41.38  76.36  15.50  15.89   8.03
16:52    9.65  10.66   70.8    2.0   33.2

16:53   40.21  76.80  15.14  15.98   8.09
16:53    9.36  10.77   68.7    2.0   33.8

16:54   38.32  79.50  13.99  18.09   8.31
16:54    8.90  11.45   61.9    2.3   35.7

16:55   35.83  80.86  13.41  17.99   8.37
16:55    8.29  11.80   58.5    2.3   36.2

16:56   34.05  81.24  13.08  17.11   8.80
16:56    7.85  11.90   56.6    2.2   40.1

16:57   32.89  83.08  12.94  17.07   8.87
16:57    7.57  12.38   55.6    2.2   40.7

16:58   30.59  84.13  12.23  16.98   8.93
16:58    7.00  12.67   51.6    2.2   41.3

16:59   30.19  82.30  11.88  16.77   8.91
16:59    6.91  12.18   50.0    2.1   41.2

17:00   31.40  81.27  12.14  16.48   8.87
17:00    7.20  11.91   51.6    2.1   40.8

17:01   33.37  80.48  12.65  16.16   8.58
17:01    7.68  11.70   54.5    2.0   38.1

17:02   33.23  82.67  11.92  15.99   8.30
17:02    7.65  12.27   50.1    2.0   35.7

17:03   32.65  79.40  11.76  16.03   8.22
17:03    7.51  11.42   49.8    2.0   34.9

17:04   35.61  77.21  12.81  16.00   8.16
17:04    8.23  10.87   55.8    2.0   34.4

17:05   38.00  75.86  13.23  15.94   7.99
17:05    8.82  10.54   58.3    2.0   32.9

17:06   39.27  77.08  13.81  16.06   7.83
17:06    9.13  10.84   61.3    2.0   31.4

17:07   37.69  79.68  13.40  15.91   7.61
17:07    8.74  11.49   58.6    2.0   29.4

17:08   35.50  80.59  12.20  15.61   7.82
17:08    8.21  11.73   52.0    2.0   31.3

17:09   34.04  80.47  11.66  15.48   7.95
17:09    7.85  11.70   49.1    1.9   32.5

17:10   34.17  80.03  12.13  15.40   7.93
17:10    7.88  11.59   51.7    1.9   32.3

17:11   35.23  78.71  12.18  15.42   7.59
17:11    8.14  11.25   52.2    1.9   29.2

17:12   36.34  76.21  12.85  15.34   7.65
17:12    8.41  10.62   56.2    1.9   29.8

17:13   38.68  76.91  13.46  15.27   7.53
17:13    8.98  10.80   59.4    1.9   28.7

17:14   38.20  77.88  12.98  15.29   7.52
17:14    8.87  11.04   56.7    1.9   28.6

17:15   38.73  74.73  13.71  15.27   7.23
17:15    9.00  10.26   61.1    1.9   26.0

17:16   39.45  78.78  14.55  15.27   7.36
17:16    9.17  11.26   65.1    1.9   27.2

17:17   37.64  75.96  14.05  15.28   7.24
17:17    8.73  10.56   62.8    1.9   26.1

17:18   41.29  69.63  16.73  15.29   6.98
17:18    9.62   9.06   79.1    1.9   23.7

17:19   45.86  71.92  20.46  15.32   7.00
17:19   10.74   9.59  100.1    1.9   23.9

17:20   44.18  73.00  16.33  15.41   7.25
17:20   10.33   9.84   76.1    1.9   26.2

17:21   44.12  70.99  17.23  15.44   7.25
17:21   10.32   9.37   81.7    1.9   26.1

17:22   44.84  73.45  19.52  15.54   7.57
17:22   10.49   9.95   94.3    1.9   29.1

17:23   43.05  72.83  17.79  15.53   7.74
17:23   10.05   9.80   84.5    1.9   30.6

17:24   43.41  75.00  19.53  15.58   7.76
17:24   10.14  10.32   93.9    1.9   30.8

17:25   43.36  71.24  23.22  15.59   7.62
17:25   10.13   9.43  116.5    1.9   29.5

17:26   41.12  81.68  21.53  15.57   7.86
17:26    9.58  12.01  103.5    1.9   31.7

17:27   33.80  82.78  16.57  15.60   8.21
17:27    7.79  12.30   75.4    1.9   34.8

17:28   31.11  83.48  15.94  15.62   8.41
17:28    7.13  12.49   71.8    2.0   36.6

17:29   30.35  79.84  14.87  15.57   8.30
17:29    6.94  11.54   66.7    1.9   35.7

17:30   36.50  74.71  17.34  15.56   7.69
17:30    8.45  10.25   81.5    1.9   30.2

17:31   40.66  74.43  20.26  15.65   7.15
17:31    9.47  10.19   98.3    2.0   25.3

17:32   40.12  73.62  19.03  15.63   7.00
17:32    9.34   9.99   91.4    2.0   23.9
```

```
17:33   43.36   77.03   26.45   15.56    6.78
17:33   10.13   10.83   133.9     1.9    21.9

17:34   35.38   81.44   20.20   15.66    7.22
17:34    8.18   11.95    96.0     2.0    25.9

17:35   34.05   81.54   16.69   15.51    7.51
17:35    7.85   11.98    76.3     1.9    28.5

17:36   32.65   81.72   14.62   15.42    7.75
17:36    7.51   12.02    64.9     1.9    30.7

17:37   31.24   83.72   14.51   15.45    8.08
17:37    7.16   12.55    63.9     1.9    33.7

17:38   30.18   82.83   13.45   15.21    8.05
17:38    6.90   12.32    58.3     1.9    33.3

17:39   30.54   81.92   13.38   15.19    8.18
17:39    6.99   12.08    58.1     1.9    34.6

17:40   31.81   81.80   13.81   15.20    8.16
17:40    7.30   12.05    60.5     1.9    34.4

17:41   33.97   77.59   15.16   15.26    7.80
17:41    7.83   10.96    68.7     1.9    31.1

17:42   37.72   74.67   15.94   15.32    7.31
17:42    8.75   10.25    73.6     1.9    26.7

17:43   40.25   76.90   16.27   15.36    7.30
17:43    9.37   10.79    75.0     1.9    26.6

17:44   39.05   74.78   14.45   15.39    7.28
17:44    9.08   10.27    65.3     1.9    26.5

17:45   41.63   71.55   15.07   15.41    7.06
17:45    9.71    9.50    69.3     1.9    24.4

17:46   44.59   72.00   17.23   15.47    6.79
17:46   10.43    9.61    81.4     1.9    22.0

17:47   43.94   73.75   15.56   15.54    6.87
17:47   10.27   10.02    71.6     1.9    22.8

17:48   41.23   77.31   14.57   15.53    7.08
17:48    9.61   10.90    65.5     1.9    24.7

17:49   38.73   78.06   13.78   15.54    7.21
17:49    9.00   11.08    61.0     1.9    25.8

17:50   36.34   81.58   12.96   15.60    7.36
17:50    8.41   11.99    55.9     1.9    27.2

17:51   32.23   83.92   12.46   15.60    7.61
17:51    7.40   12.61    52.9     1.9    29.4

17:52   30.56   83.69   12.33   15.61    8.01
17:52    7.00   12.55    52.2     1.9    33.0

17:53   29.31   84.14   11.95   15.64    8.28
17:53    6.69   12.67    50.1     2.0    35.4

17:54   30.12   82.00   11.85   15.66    8.28
17:54    6.89   12.10    49.9     2.0    35.4

17:55   32.34   80.83   12.71   15.68    8.13
17:55    7.43   11.79    54.7     2.0    34.1

17:56   33.38   81.19   12.67   15.77    8.00
17:56    7.69   11.88    54.4     2.0    33.0

17:57   34.89   76.03   13.19   15.82    7.69
17:57    8.06   10.58    58.1     2.0    30.1

17:58   39.36   72.55   14.58   15.84    7.22
17:58    9.15    9.74    66.4     2.0    25.9

17:59   43.91   70.67   16.74   15.80    6.88
17:59   10.27    9.30    78.9     2.0    22.8

18:00   46.08   68.15   18.34   15.83    6.63
```

```
18:00   10.80    8.72    88.7     2.0    20.6

18:01   48.29   68.98   20.05   14.35    6.00
18:01   11.34    8.91    98.5     1.8    14.8

18:02   48.41   68.03   20.48   14.80    6.98
18:02   11.37    8.70   101.2     1.8    23.7

18:03   48.83   68.77   20.94   15.85    6.42
18:03   11.47    8.86   103.7     2.0    18.6


18:12          18.92   81.62   48.70   67.97    4.78
18:13          18.96   81.75   48.49   67.67    4.77
18:14          18.44   81.69   48.39   67.25    4.75
18:15          18.30   81.73   48.62   67.00    4.73
18:15FINAL SPAN
 1  CO2  81.73     12.00
 2   CO  48.62    336.00
18:16          18.66   81.79   48.83   67.05    4.70
18:17          21.30   43.64   45.26   66.73    4.72
18:18          52.59    3.29   10.65   70.04    4.69
18:19          58.09    2.79    5.78   68.76    4.67
18:20          56.87    2.69    4.00   68.30    4.66
18:21          59.03    2.50    3.18   67.99    4.65
18:21FINAL SPAN
 3  THC  67.99     10.03
18:24          59.19    2.32    2.54    4.12    4.64
18:25          59.23    2.24    2.32    4.07    4.63
18:25FINAL SPAN
 0   O2  59.23     14.01
18:29           4.97    2.16    1.90    4.00   17.93
18:30           2.88    2.15    1.94    3.96   18.50
18:30FINAL ZERO
 3  THC   3.96
18:58           1.05    1.75    2.05    0.00   21.20
18:59           1.66    2.05    2.08    0.00   21.35
18:59FINAL SPAN
 4  SO2  21.35    413.00
19:09           2.60    2.30    2.27    0.00    6.52
19:10           2.64    1.95    2.12    0.00    5.43
19:11           2.55    2.08    2.02    0.00    5.36
19:12           2.51    1.92    2.11    0.00    5.29
19:12FINAL ZERO
 0   O2   2.51
 1  CO2   1.92
 2   CO   2.11
 4  SO2   5.29
```

Final leak chk
passes
1915

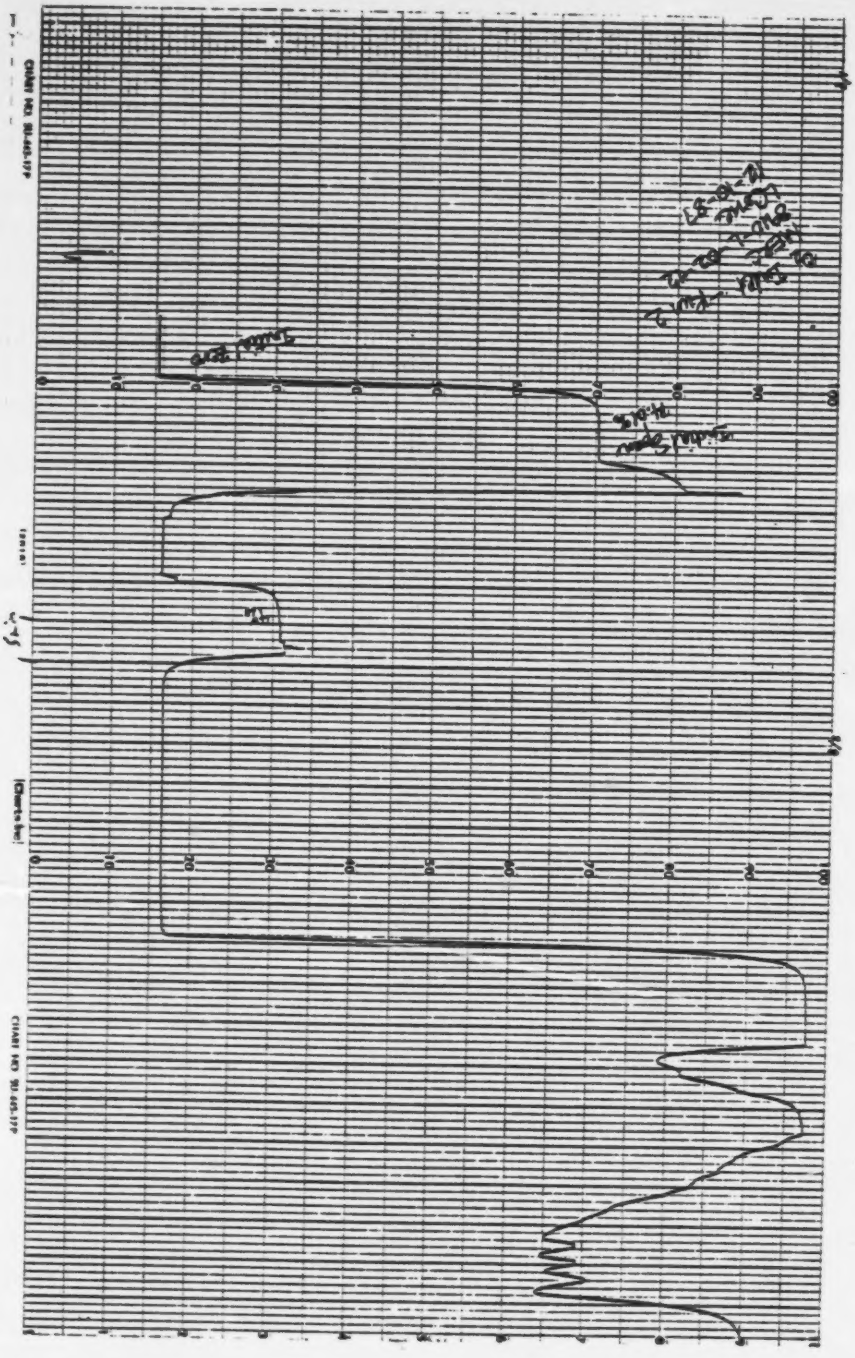
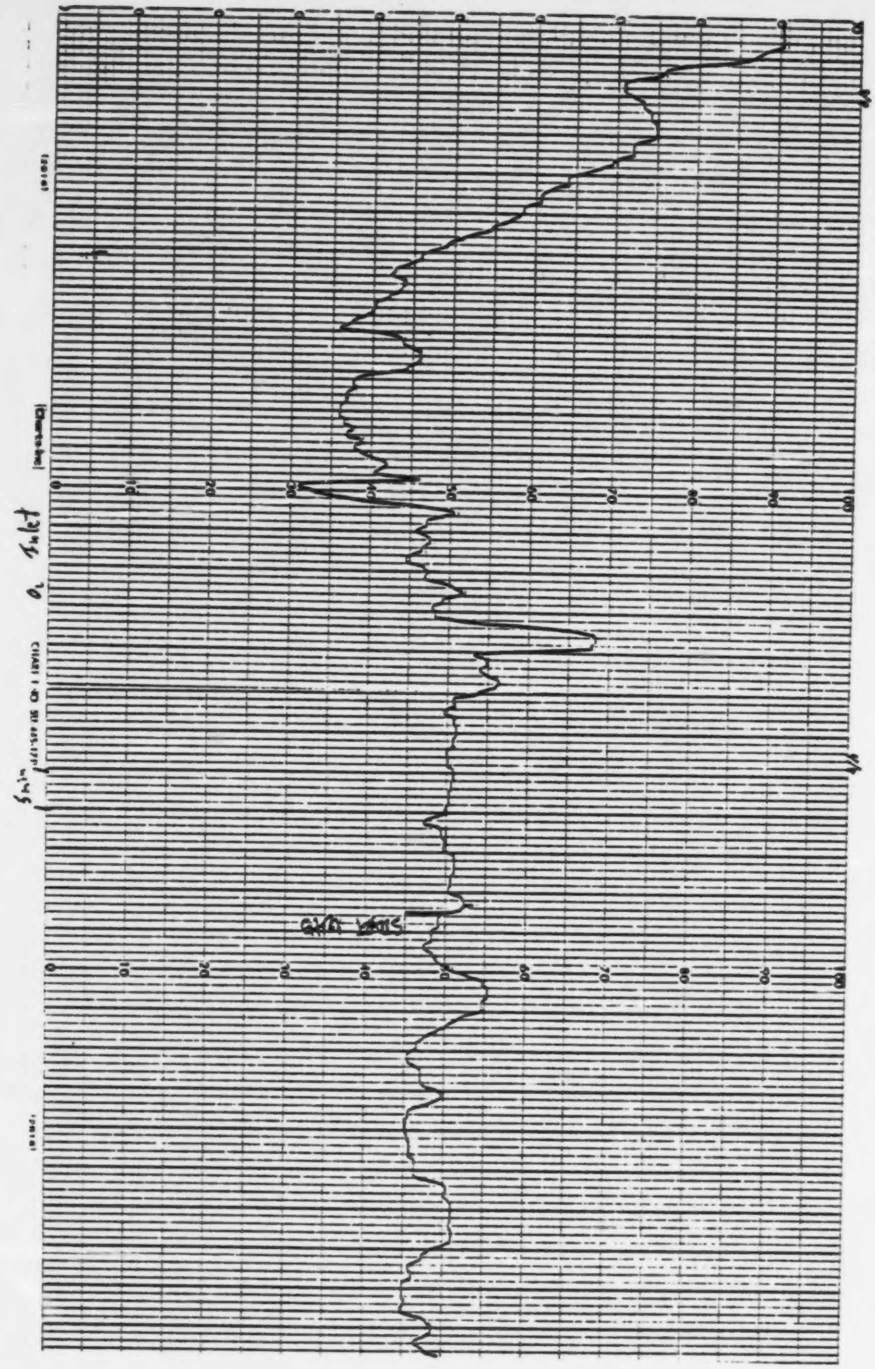


CHART NO. SU-665-17P
0
10
20
30
40
50
60
70
80
90
100
Initial Zero
Initial Span
94.01%
O2 Inlet - Run 2
NEPC
SWD-2-02-02
LCone
12-10-87
(2010)
4:45
(Charts Inc)
CHART NO. SU-665-17P


O2 Inlet
Span
CHART NO. 5U 465-171
(Chart-Inc)
0
10
20
30
40
50
60
70
80
90
100

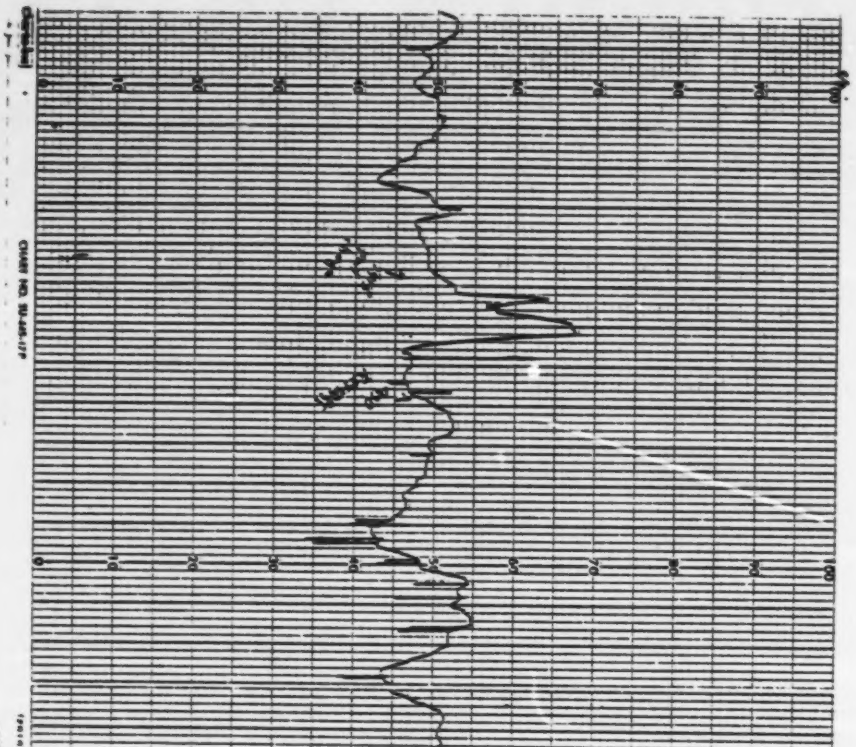
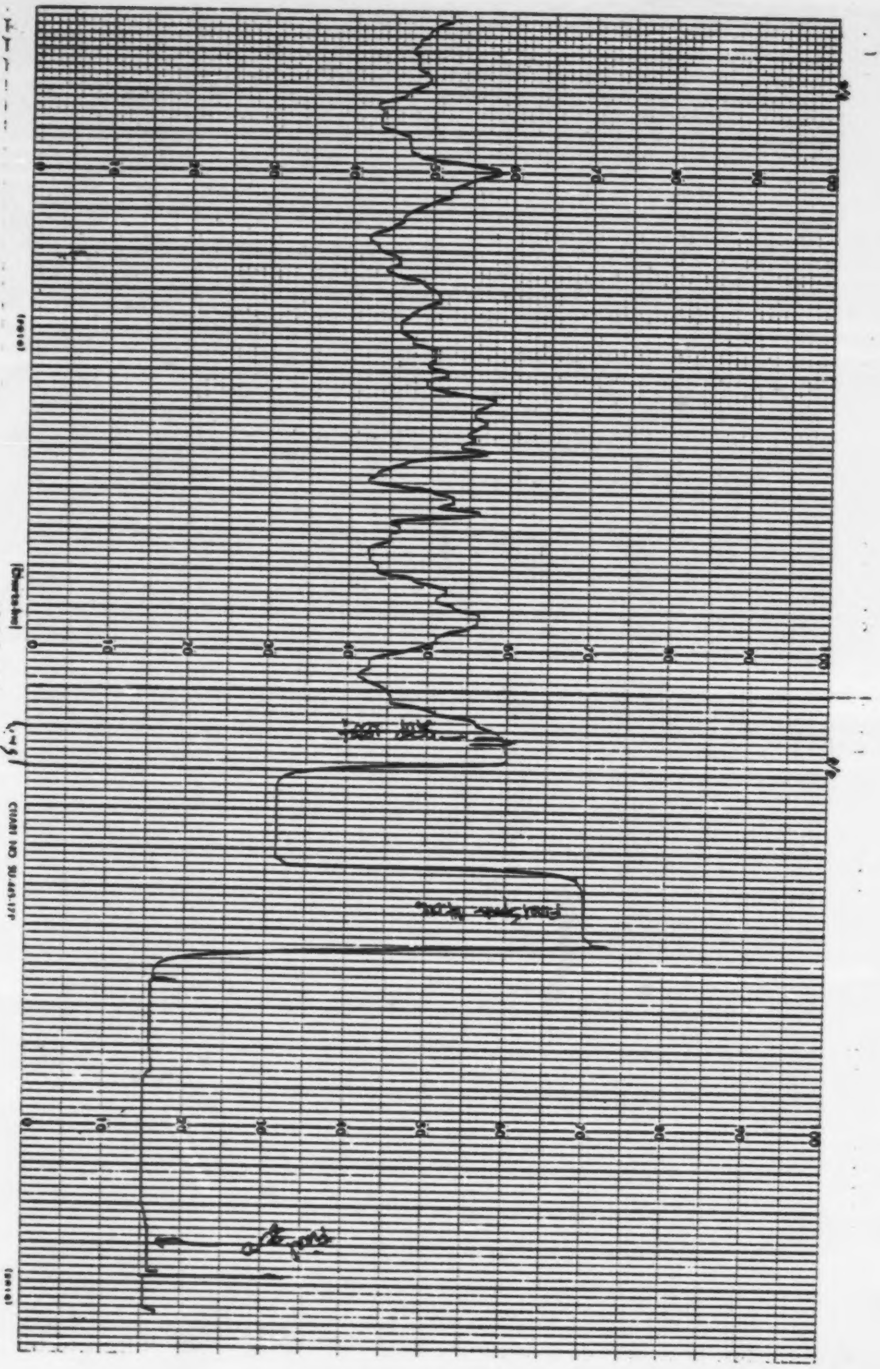


CHART NO. SU-405-17P
0
10
20
30
40
50
60
70
80
90
100


0
10
20
30
40
50
60
70
80
90
100

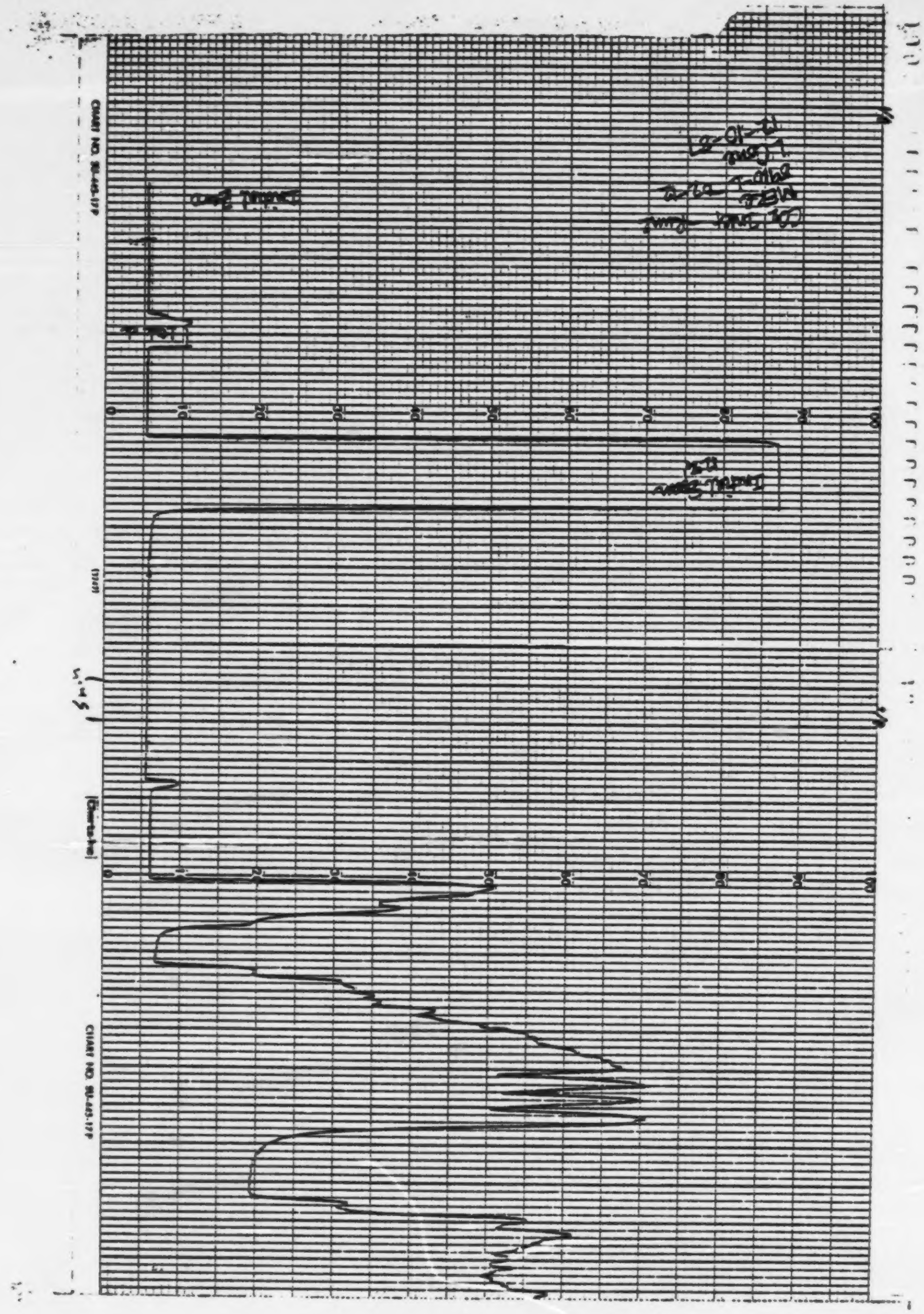
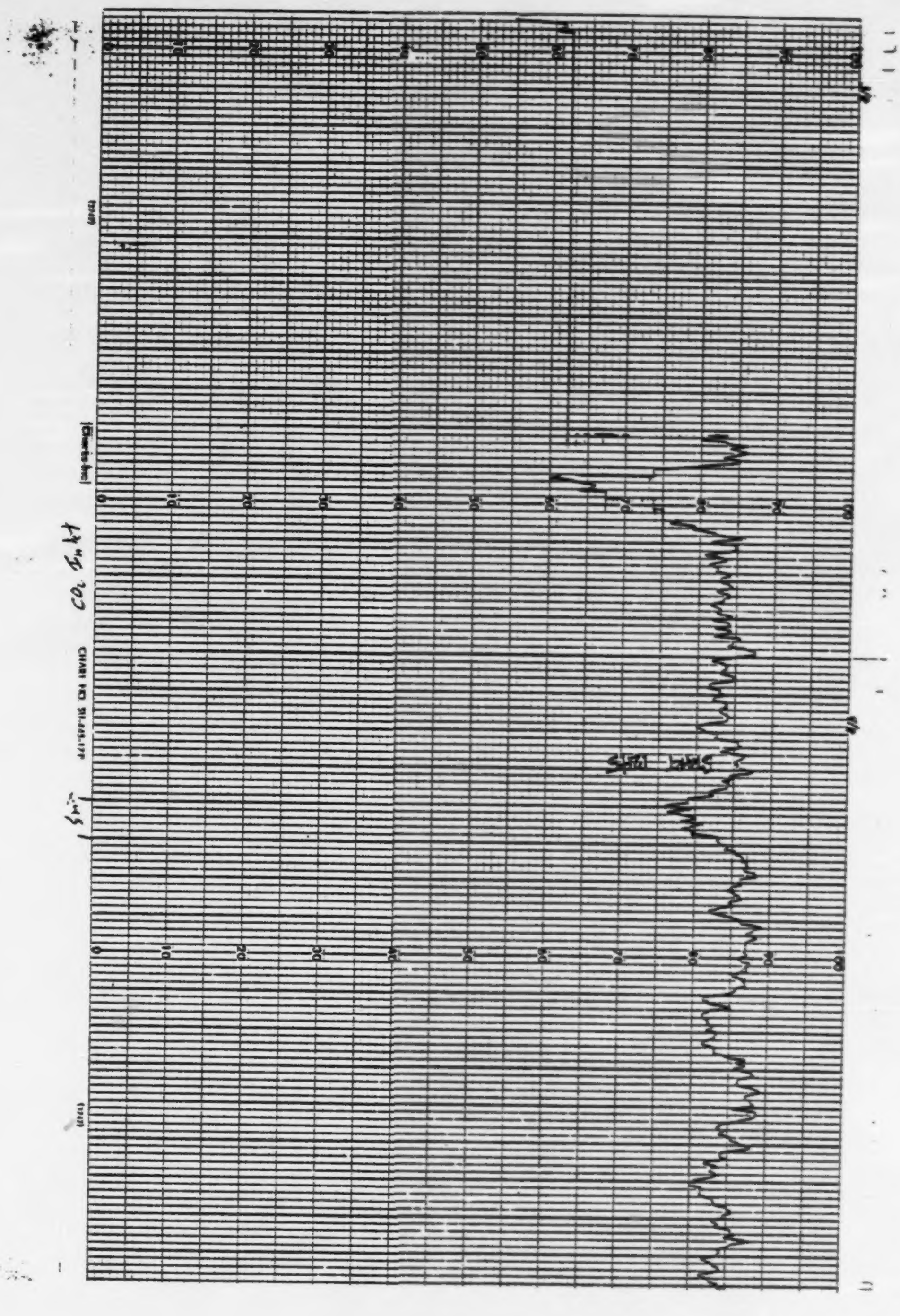


CHART NO. SU-445-17P
0
10
20
30
40
50
60
70
80
90
100
Initial Zero
Initial Span
12:34
CO2 Inlet – Run 1
MEKE – 02-12
0910-2
2 Conc
12-10-87


0
10
20
30
40
50
60
70
80
90
100
Charts Inc
CHART NO. 511-445-17P
CO2

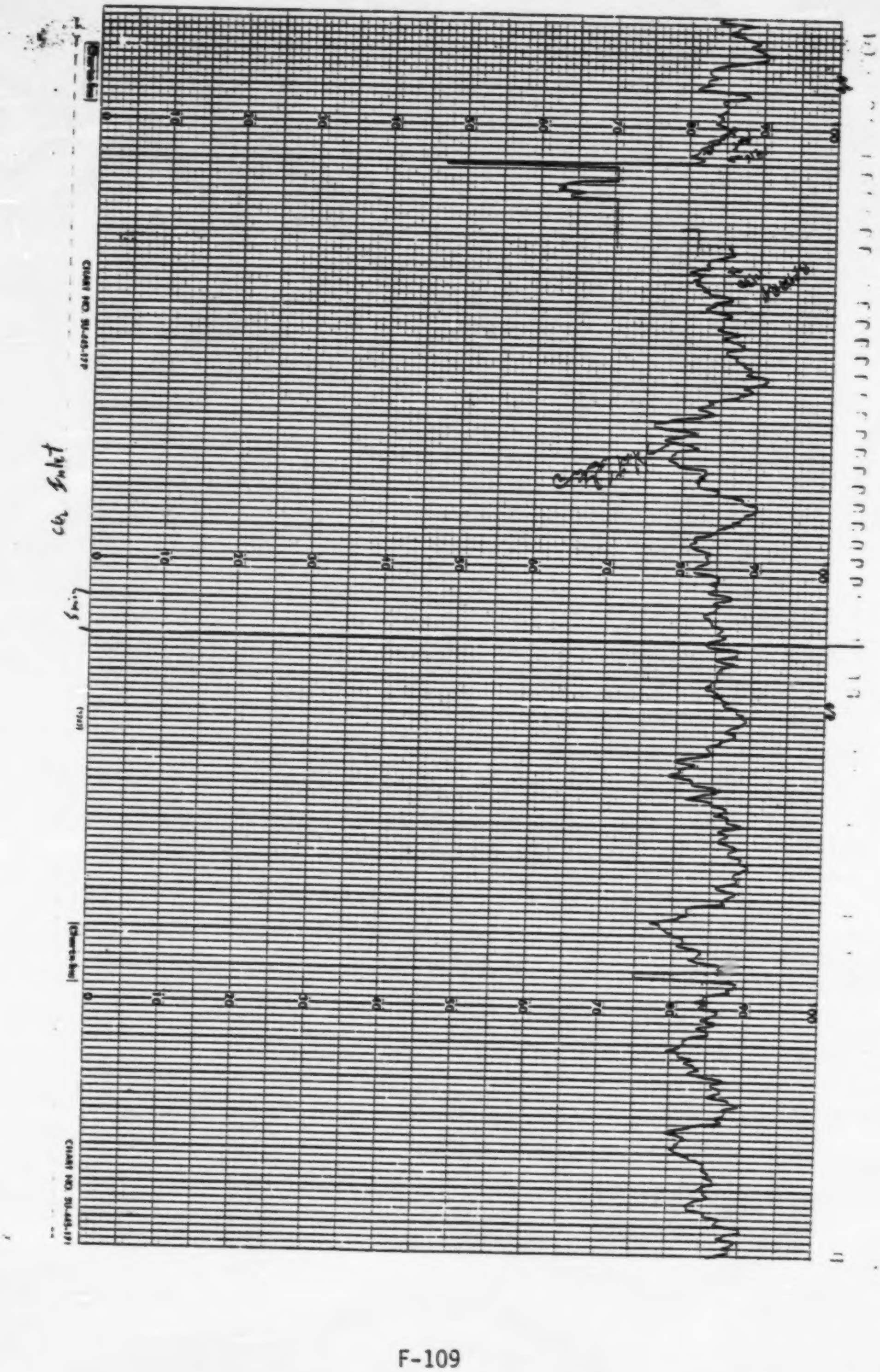
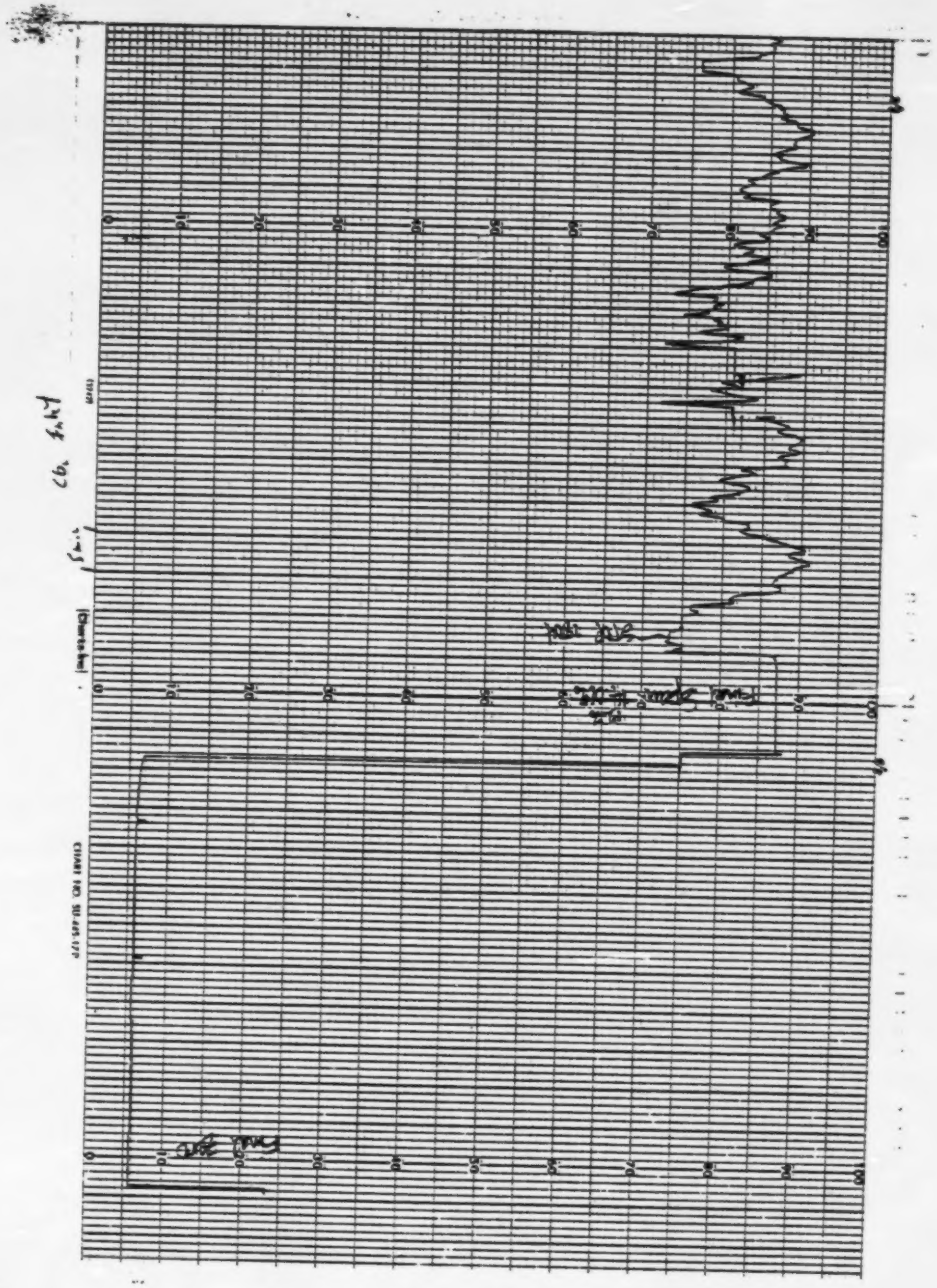
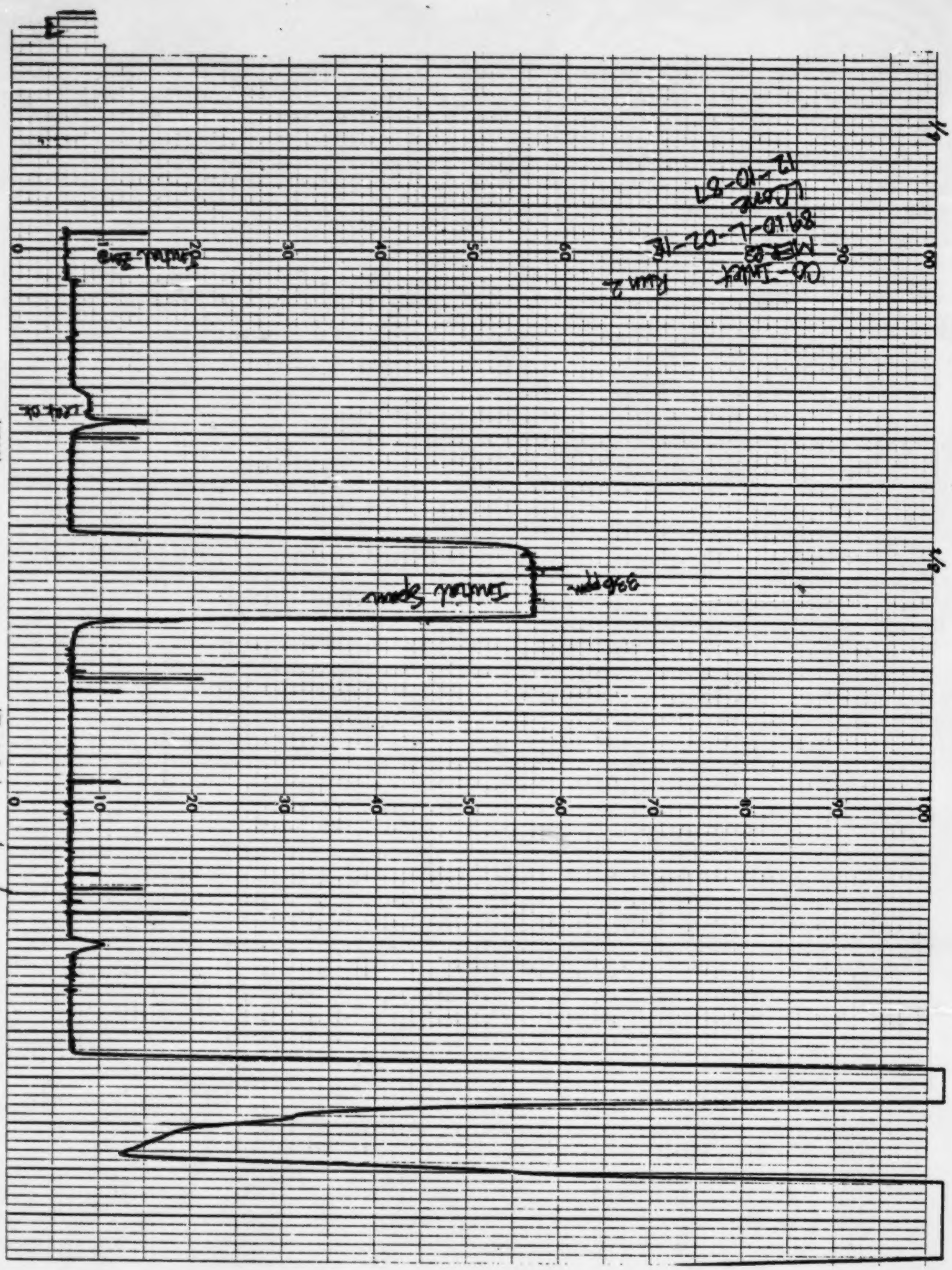
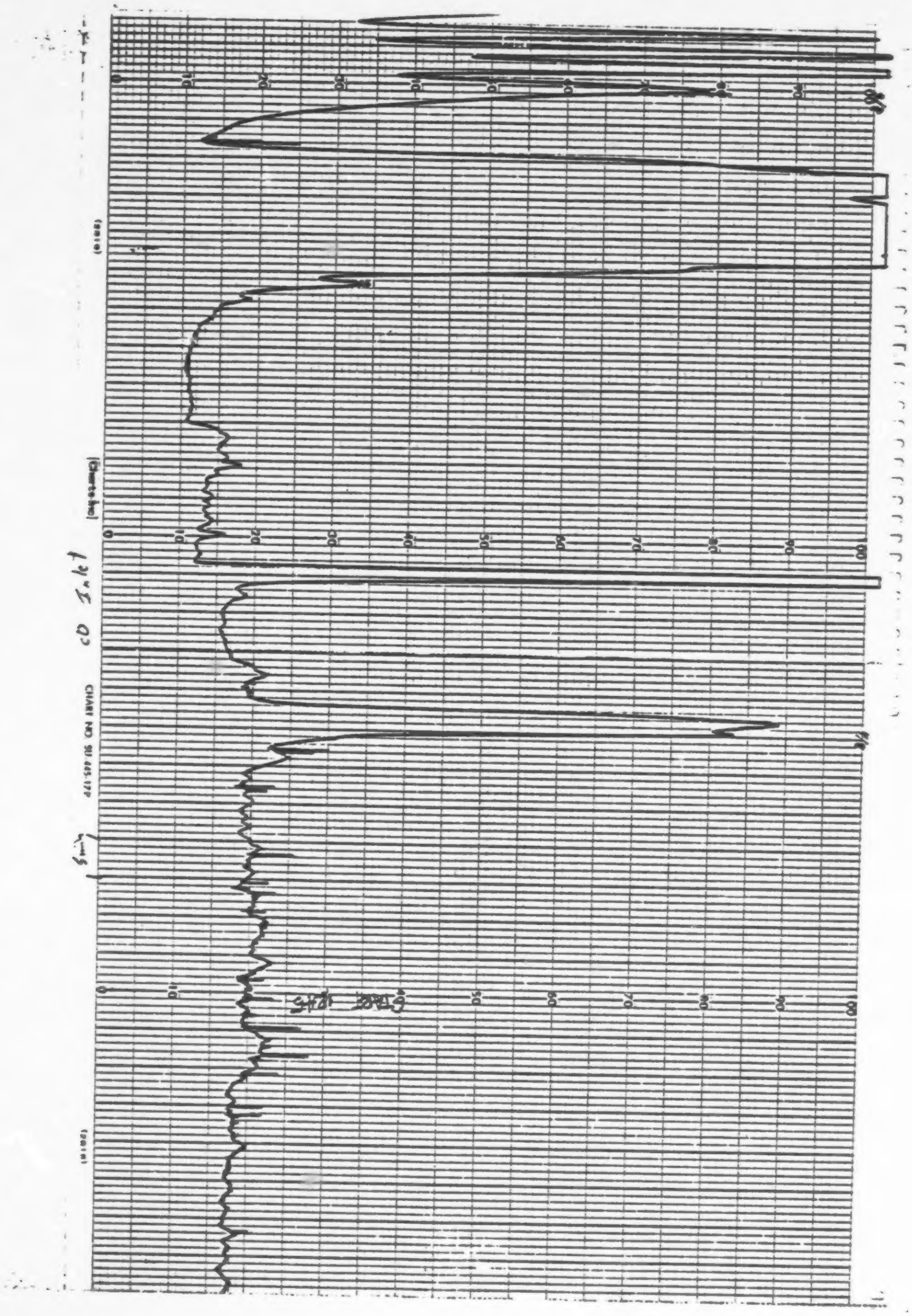
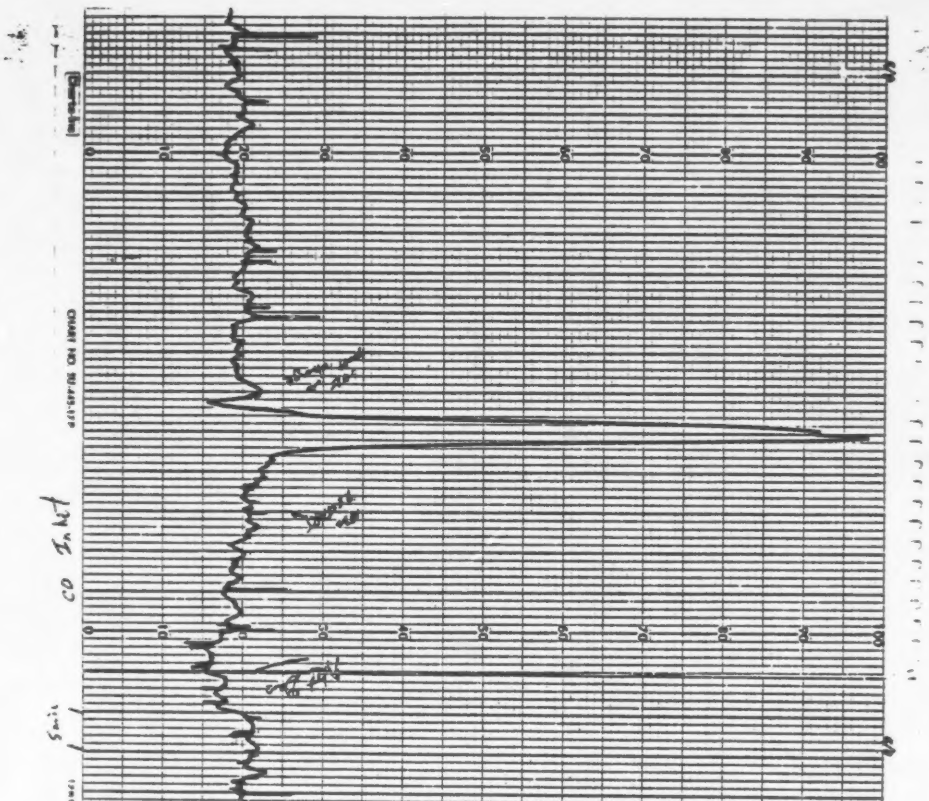


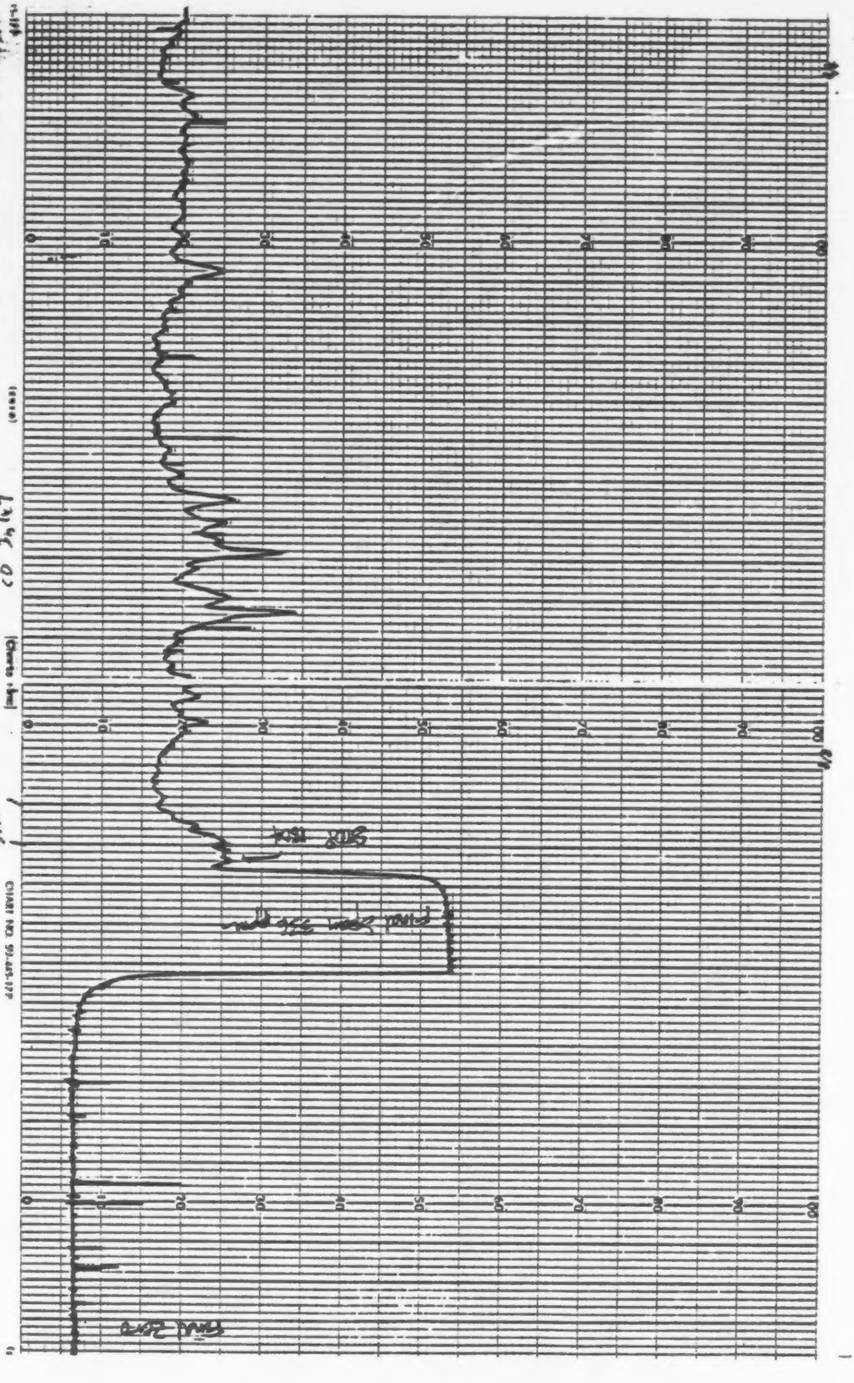
CHART NO.
0
10
20
30
40
50
60
70
80
90
100

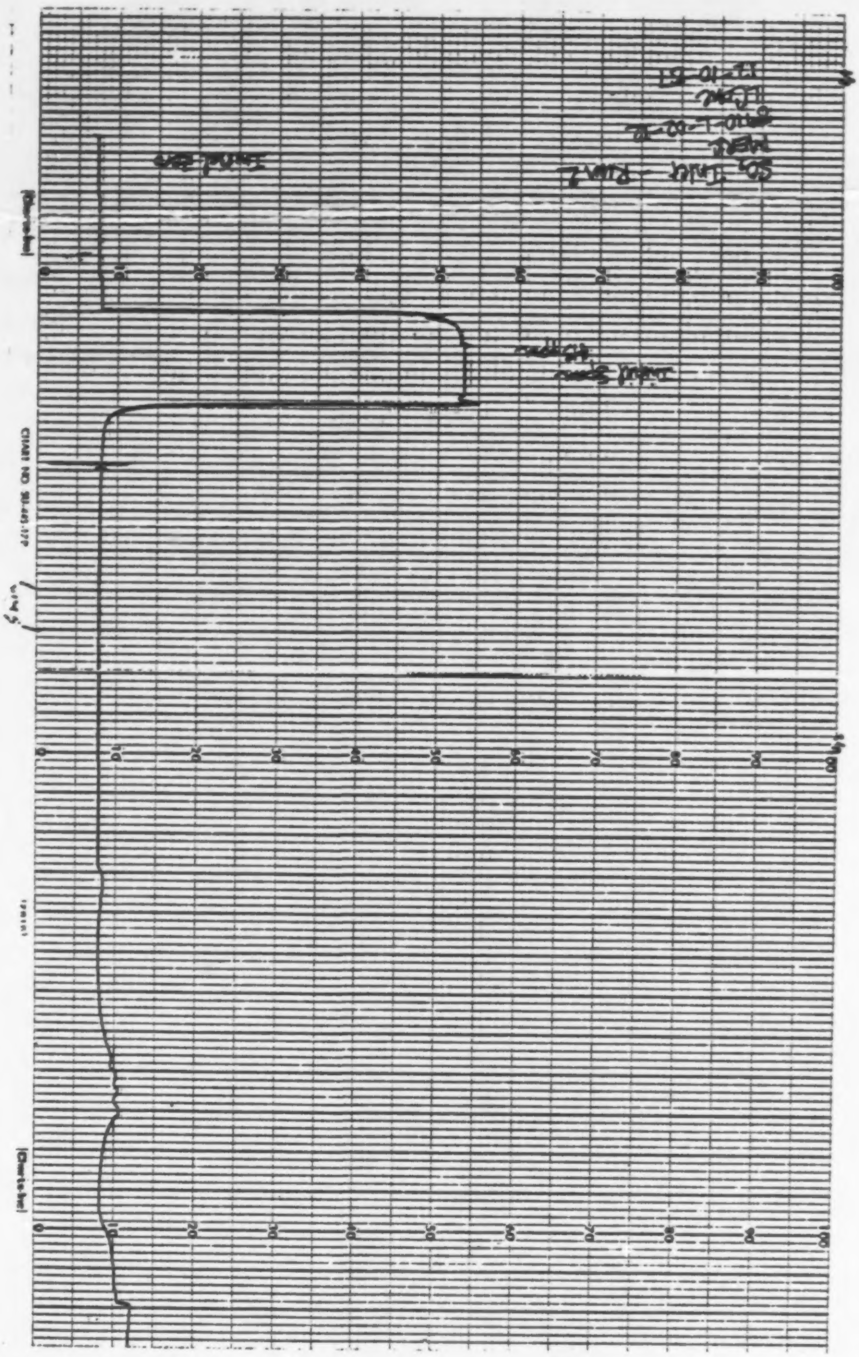

Ch. #4?
5 min
CHART NO. SU-445-17P
Final Span
Final Zero
0
10
20
30
40
50
60
70
80
90
100

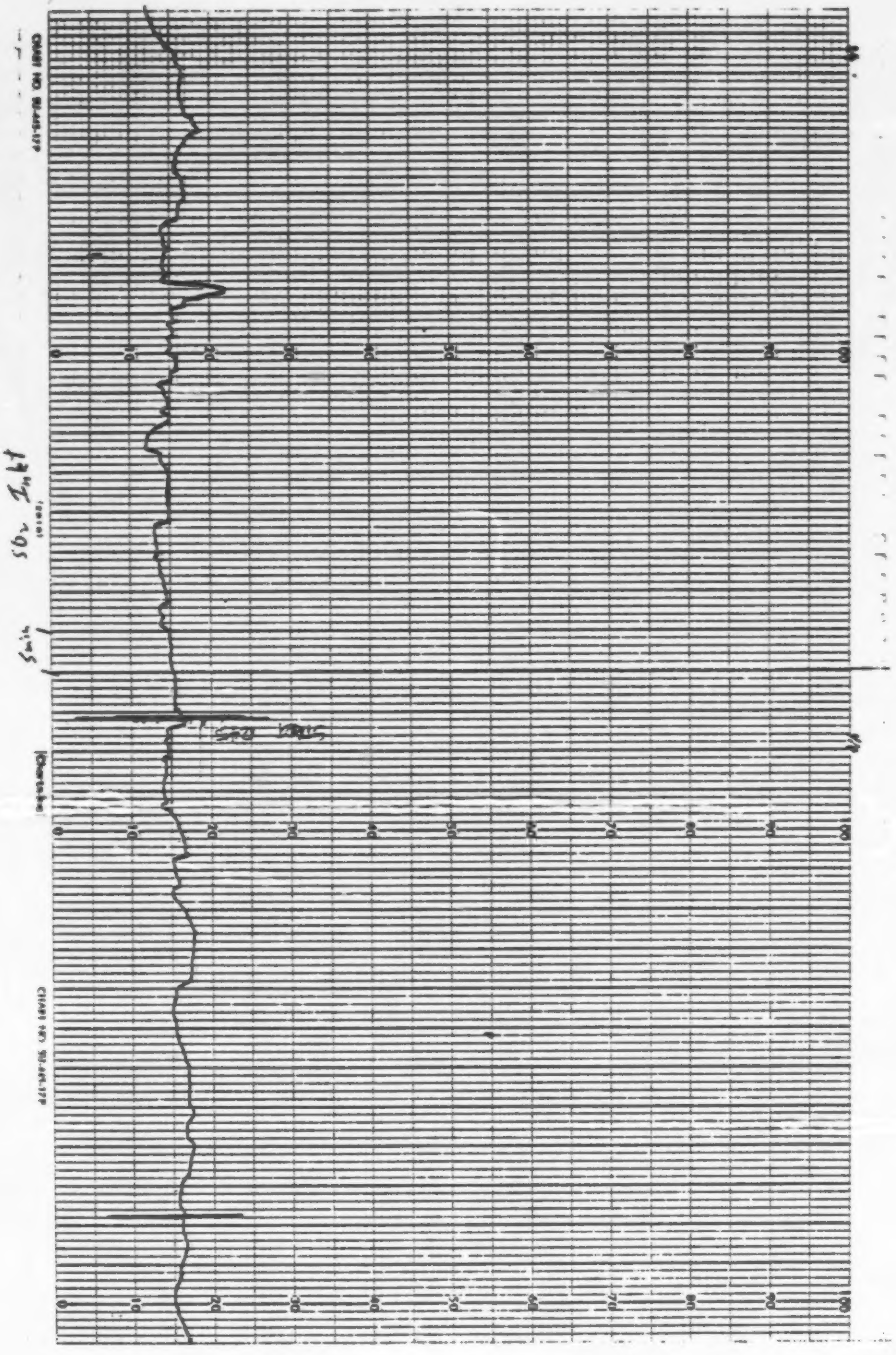
CO-Inlet
MEP-83
8910-L-02-18
L Cone
12-10-87
Run 2
Initial Zero
Leak Ck
Initial Span
336 ppm
CO Inlet
Span
0
10
20
30
40
50
60
70
80
90
100
1/8
3/8
(2816)
Charts-Inc
CHART NO. SU-445-17P

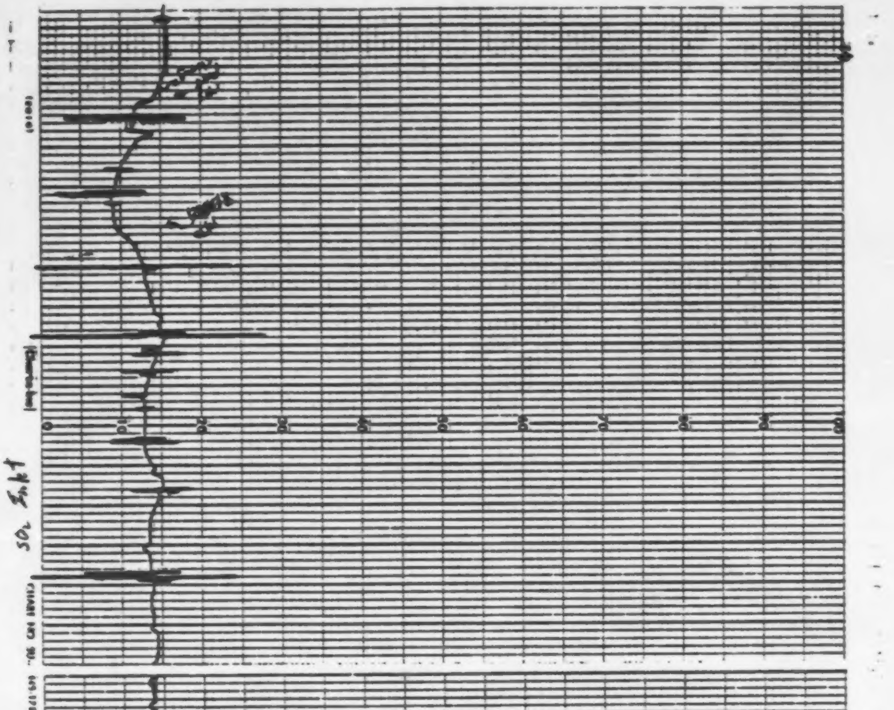

0
10
20
30
40
50
60
70
80
90
100
(Charts Inc)
CHART NO. SU 465-177
CO Inlet
Stack 1045


CO Inlet
5 min
CHART NO. SU-445-11P
[Charts Inc]
0
10
20
30
40
50
60
70
80
90
100


0
10
20
30
40
50
60
70
80
90
100
CHART NO. 93-445-177
CO Inlet
5 min
Stop 1534
Final Span 556 ppm
Final Zero


SO2 Inlet - Run 2
MERC
#110-L-02-12
ILCone
12-10-57
Initial zero
Initial Span
45ppm
CHART NO
0
10
20
30
40
50
60
70
80
90
100


SO2 Injt
5 min
START DAS
Chartsoke
0
10
20
30
40
50
60
70
80
90
100


SO2 Inlet
0
10
20
30
40
50
60
70
80
90
100

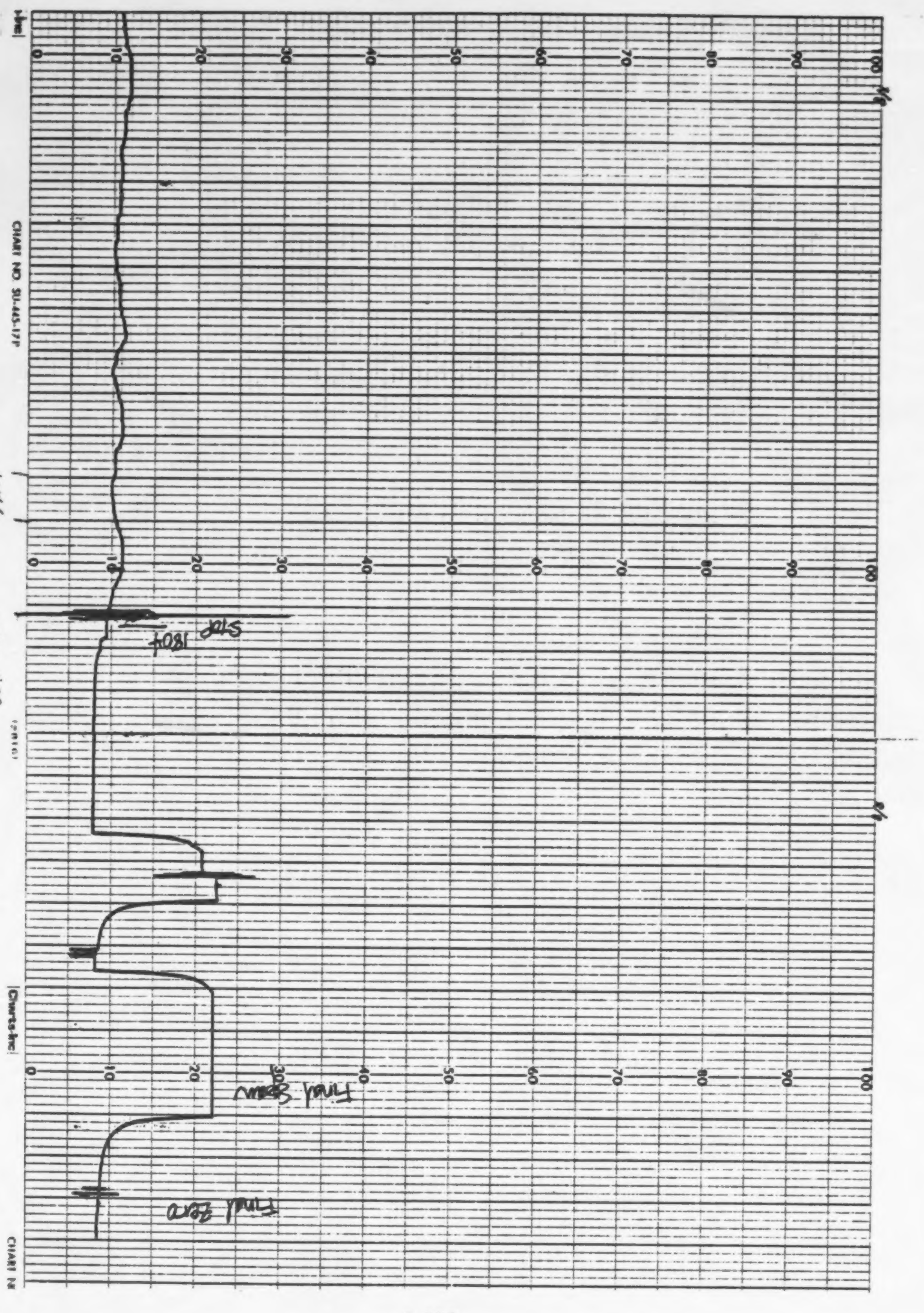


CHART NO SU-445-17P
Charts Inc
0
10
20
30
40
50
60
70
80
90
100
SO2 Inlet
Start 1804
Final Span
Final Zero

MR2IN

TIME		O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)
1245	12.75	8.49	11.58	71.8	64.1
1246	12.77	8.35	11.70	72.0	62.6
1247	12.78	8.15	11.56	67.8	65.9
1248	12.80	8.35	11.24	72.5	62.9
1249	12.82	8.60	10.89	70.3	62.8
1250	12.83	8.96	10.30	72.4	62.5
1251	12.85	9.58	9.65	80.2	59.4
1252	12.87	10.12	9.70	87.2	59.1
1253	12.88	10.22	10.05	84.3	61.2
1254	12.90	10.02	10.09	82.8	59.7
1255	12.92	9.97	10.46	78.9	66.7
1256	12.93	9.49	11.04	74.2	74.5
1257	12.95	8.95	11.40	69.1	78.1
1258	12.97	8.48	11.74	61.5	81.8
1259	12.98	8.04	11.88	58.3	84.1
1300	13.00	7.81	12.11	61.0	84.9
1301	13.02	7.59	11.86	60.2	71.8
1302	13.03	7.78	11.50	61.5	72.8
1303	13.05	8.12	11.64	62.5	74.9
1304	13.07	8.08	11.47	61.6	76.7
1305	13.08	8.31	10.83	64.1	68.7
1306	13.10	8.76	11.44	69.8	73.5
1307	13.12	8.39	12.12	63.8	80.5
1308	13.13	7.70	12.08	59.9	85.9
1309	13.15	7.55	12.07	59.0	90.4
1310	13.17	7.59	11.87	57.3	93.5
1311	13.18	7.70	11.83	60.3	92.5
1312	13.20	7.79	11.93	60.5	90.9
1313	13.22	7.72	11.76	56.2	89.8
1314	13.23	7.90	11.70	57.4	88.5
1315	13.25	7.90	11.81	57.3	88.8
1316	13.27	7.91	11.24	54.5	86.3
1317	13.28	8.52	10.64	60.3	74.6
1318	13.30	8.94	11.08	61.7	71.1
1319	13.32	8.94	10.56	59.0	68.9
1320	13.33	9.17	10.81	59.0	67.7
1321	13.35	9.12	10.89	59.6	71.2
1322	13.37	9.01	10.82	55.3	73.6
1323	13.38	9.13	10.79	55.8	74.1
1324	13.40	9.08	11.09	60.8	76.7
1325	13.42	8.74	11.78	58.4	80.7
1326	13.43	8.18	11.82	56.1	83.4
1327	13.45	7.92	12.12	60.5	86.7
1328	13.47	7.73	11.78	62.6	85.8
1329	13.48	7.81	12.36	60.6	87.6
1330	13.50	7.47	12.08	68.1	85.7
1331	13.52	7.50	12.02	67.2	86.7
1332	13.53	7.58	12.32	63.5	88.7
1333	13.55	7.40	11.79	60.2	90.6
1334	13.57	7.92	11.17	65.7	84.4
1335	13.58	8.47	11.35	68.5	82.4
1336	13.60	8.41	11.76	68.7	85.3

MR2IN

TIME		O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)
1337	13.62	7.98	11.69	62.8	91.7
1338	13.63	8.15	11.22	67.2	88.5
1339	13.65	8.56	10.86	73.0	86.2
1340	13.67	8.85	10.99	73.5	84.9
1341	13.68	8.91	10.45	70.6	80.5
1342	13.70	9.39	10.48	77.4	75.9
1343	13.72	9.45	10.68	72.0	74.4
1344	13.73	9.25	11.07	63.6	74.8
1345	13.75	8.87	11.55	60.1	78.3
1346	13.77	8.45	11.21	58.9	77.5
1347	13.78	8.61	11.11	65.8	78.3
1348	13.80	8.61	11.60	67.3	80.2
1349	13.82	8.32	11.74	66.0	82.8
1350	13.83	8.05	11.37	64.8	82.0
1351	13.85	8.36	11.03	68.4	78.2
1352	13.87	8.76	10.94	72.2	74.6
1353	13.88	8.88	11.13	73.5	74.2
1354	13.90	8.89	10.74	76.6	72.3
1355	13.92	9.03	11.13	76.4	68.4
1356	13.93	8.76	11.31	75.2	68.0
1357	13.95	8.59	11.71	78.1	69.3
1358	13.97	8.13	11.63	78.8	72.9
1359	13.98	8.06	12.20	74.3	76.3
1400	14.00	7.57	12.34	73.5	80.2
1401	14.02	7.27	12.76	67.2	83.9
1402	14.03	6.91	12.16	67.3	83.4
1403	14.05	7.53	10.95	73.9	76.4
1404	14.07	8.55	10.96	78.0	72.0
1405	14.08	8.86	10.72	77.3	71.2
1406	14.10	9.13	11.07	79.7	72.1
1407	14.12	8.60	11.80	69.5	74.6
1408	14.13	8.23	11.40	66.8	74.8
1409	14.15	8.36	11.26	67.6	74.8
1410	14.17	8.53	11.18	68.9	74.9
1411	14.18	8.61	11.39	69.0	73.8
1412	14.20	8.51	11.25	65.9	72.9
1413	14.22	8.62	10.94	68.1	69.9
1414	14.23	8.87	10.57	70.4	66.8
1415	14.25	9.30	10.43	79.8	62.9
1416	14.27				
1423	14.38				
1424	14.40	7.85	11.56	94.1	
1425	14.42	8.05	12.00	89.2	
1426	14.43	7.84	12.04	86.1	
1427	14.45	7.78	11.75	82.9	
1428	14.47	8.02	11.72	76.4	
1429	14.48	8.16	11.09	73.8	
1430	14.50	8.72	10.80	77.7	
1431	14.52	9.16	10.56	77.6	
1432	14.53	9.42	10.54	79.6	
1433	14.55	9.46	10.83	80.4	
1434	14.57	9.20	11.48	75.3	
1435	14.58	8.62	11.13	66.6	

MR2IN

TIME		O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)
1436	14.60	8.73	11.16	72.5	
1437	14.62	8.63	11.53	68.6	
1438	14.63	8.45	11.39	65.7	
1439	14.65	8.45	11.72	68.4	
1440	14.67	8.19	11.78	63.1	
1441	14.68	7.95	11.92	59.4	
1442	14.70	7.91	11.77	65.4	
1443	14.72	7.90	12.12	69.1	
1444	14.73	7.58	12.41	66.5	
1445	14.75	7.28	12.84	61.7	
1446	14.77	6.83	12.50	59.0	
1447	14.78	7.01	12.31	53.9	
1448	14.80	7.08	11.38	46.4	
1449	14.82	7.86	10.83	50.6	
1450	14.83	8.42	10.99	47.9	
1451	14.85	8.68	9.52	52.5	
1452	14.87	9.72	9.74	61.4	
1453	14.88	9.80	10.15	54.8	
1454	14.90	9.66	10.16	58.5	
1455	14.92	9.45	10.21	55.7	
1456	14.93	9.69	9.83	72.2	
1457	14.95	10.07	10.15	78.8	
1458	14.97	9.82	10.94	78.5	
1459	14.98	9.27	10.72	76.5	
1500	15.00	9.24	10.98	81.2	
1501	15.02	8.96	11.62	79.7	
1502	15.03	8.31	12.39	75.4	
1503	15.05	7.51	12.68	79.8	
1504	15.07	7.10	12.23	77.0	
1505	15.08	7.38	11.78	69.1	
1506	15.10	7.84	11.29	70.6	
1507	15.12	8.44	10.63	74.6	
1508	15.13	9.05	10.60	78.1	
1509	15.15	9.24	11.05	77.9	
1510	15.17	9.01	11.05	71.3	
1511	15.18	8.98	10.65	69.2	
1512	15.20	9.17	11.31	70.7	
1513	15.22	8.73	11.34	62.4	
1514	15.23	8.62	11.28	60.0	
1515	15.25	8.58	11.73	58.8	
1516	15.27	8.29	11.42	58.4	
1517	15.28	8.43	11.12	59.9	
1518	15.30	8.69	11.25	64.0	
1519	15.32	8.67	11.56	62.4	
1520	15.33	8.41	11.58	59.4	
1521	15.35	8.32	11.22	59.9	
1522	15.37	8.45	12.11	62.9	
1523	15.38	7.93	11.63	57.8	
1524	15.40	8.05	11.81	62.0	
1525	15.42	8.10	11.50	63.8	
1526	15.43	8.30	11.35	64.6	
1527	15.45	8.51	11.20	68.4	
1528	15.47	8.54	11.53	69.9	

MR2IN

TIME		O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)
1529	15.48	8.30	11.82	66.2	
1530	15.50	8.02	12.19	65.7	
1531	15.52	7.56	12.51	63.7	
1532	15.53	7.25	12.21	61.1	
1533	15.55	7.45	11.96	61.4	
1534	15.57	7.63	11.81	60.4	
1535	15.58	7.94	11.26	62.6	
1536	15.60	8.39	11.10	64.6	
1537	15.62	8.81	10.41	69.3	
1538	15.63	9.33	10.43	70.1	
1539	15.65	9.57	10.22	73.7	
1540	15.67	9.61	10.84	72.6	
1541	15.68	9.07	11.48	64.5	
1542	15.70	8.68	10.89	66.3	
1543	15.72	8.79	11.60	64.5	
1544	15.73	8.27	11.69	59.5	
1545	15.75	8.02	12.00	60.6	
1546	15.77	7.66	12.09	61.3	
1547	15.78	7.67	11.86	61.3	
1548	15.80	7.85	11.86	60.6	
1549	15.82	7.75	12.16	61.6	
1550	15.83	7.56	12.29	59.0	
1551	15.85	7.26	12.60	59.5	
1552	15.87	6.95	12.37	59.2	
1553	15.88	7.10	12.33	58.8	
1554	15.90	7.25	11.80	59.6	
1555	15.92	7.64	12.17	62.2	
1556	15.93	7.54	11.80	57.5	
1557	15.95	8.01	10.70	61.0	
1558	15.97	8.86	10.47	72.2	
1559	15.98	9.47	9.73	78.8	
1600	16.00	10.00	10.02	81.8	
1601	16.02	9.88	10.47	74.4	
1602	16.03	9.53	10.57	70.6	
1603	16.05	9.24	11.10	67.2	
1604	16.07	8.89	11.00	64.1	
1605	16.08	8.61	11.83	57.4	
1606	16.10				
1607	16.12				
1608	16.13				
1609	16.15	7.98	11.35	59.2	
1610	16.17	8.34	11.17	63.9	
1611	16.18	8.43	11.63	60.9	
1612	16.20	8.14	11.36	59.7	
1613	16.22	8.20	11.39	61.5	
1614	16.23	8.32	11.40	62.2	
1615	16.25	8.48	10.73	68.0	
1616	16.27	9.01	10.40	70.9	
1617	16.28	9.39	10.50	72.1	
1618	16.30	9.28	10.82	74.0	
1619	16.32	9.02	11.03	70.3	
1620	16.33	8.86	11.31	67.1	
1621	16.35	8.31	11.75	63.5	

MR2IN

TIME		O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)
1622	16.37	7.98	11.84	60.4	
1623	16.38	7.88	11.85	56.7	
1624	16.40	7.63	12.29	55.8	
1625	16.42	7.32	12.07	55.5	
1626	16.43	7.52	11.84	54.2	
1627	16.45	7.85	10.77	61.7	
1628	16.47	8.93	10.42	76.0	
1629	16.48	9.23	10.55	70.5	
1630	16.50	9.35	10.38	75.6	
1631	16.52	9.41	10.84	79.1	
1632	16.53	9.00	11.38	72.1	
1633	16.55	8.55	11.46	71.5	
1634	16.57	8.29	11.64	71.8	
1635	16.58	8.10	11.44	69.8	
1636	16.60	8.30	11.49	72.9	
1637	16.62	8.26	11.17	74.6	
1638	16.63	8.59	10.94	71.5	
1639	16.65	8.62	11.57	72.9	
1640	16.67	8.10	11.89	68.8	
1641	16.68	7.65	12.64	66.6	
1642	16.70	7.04	12.10	70.0	
1643	16.72	7.17	12.41	70.9	
1644	16.73	7.11	12.26	66.0	
1645	16.75	7.33	11.46	65.9	
1646	16.77	8.00	11.50	71.0	
1647	16.78	8.12	11.44	66.7	
1648	16.80	8.26	10.86	64.9	
1649	16.82	9.08	8.96	76.7	
1650	16.83	10.70	9.22	99.1	
1651	16.85	10.43	10.37	82.2	
1652	16.87	9.62	10.65	73.7	
1653	16.88	9.34	10.76	71.6	
1654	16.90	8.87	11.44	64.5	
1655	16.92	8.26	11.79	61.0	
1656	16.93	7.82	11.89	59.1	
1657	16.95	7.54	12.37	58.0	
1658	16.97	6.97	12.65	53.8	
1659	16.98	6.87	12.16	52.2	
1700	17.00	7.17	11.89	53.8	
1701	17.02	7.65	11.69	56.8	
1702	17.03	7.62	12.26	52.4	
1703	17.05	7.48	11.41	52.0	
1704	17.07	8.20	10.86	58.2	
1705	17.08	8.79	10.52	60.8	
1706	17.10	9.10	10.83	63.9	
1707	17.12	8.72	11.48	61.1	
1708	17.13	8.18	11.72	54.2	
1709	17.15	7.82	11.69	51.3	
1710	17.17	7.85	11.57	53.9	
1711	17.18	8.11	11.24	54.4	
1712	17.20	8.38	10.61	58.6	
1713	17.22	8.96	10.78	62.0	
1714	17.23	8.84	11.03	59.1	

MR2IN

TIME		O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)
1715	17.25	8.97	10.25	63.8	
1716	17.27	9.15	11.25	67.8	
1717	17.28	8.70	10.55	65.5	
1718	17.30	9.60	9.05	82.3	
1719	17.32	10.72	9.58	104.1	
1720	17.33	10.31	9.83	79.3	
1721	17.35	10.30	9.36	85.0	
1722	17.37	10.47	9.94	98.1	
1723	17.38	10.03	9.79	87.9	
1724	17.40	10.12	10.31	97.7	
1725	17.42	10.11	9.42	121.2	
1726	17.43	9.56	12.00	107.7	
1727	17.45	7.76	12.29	78.5	
1728	17.47	7.10	12.48	74.7	
1729	17.48	6.91	11.52	69.4	
1730	17.50	8.42	10.24	84.8	
1731	17.52	9.45	10.18	102.2	
1732	17.53	9.31	9.98	95.1	
1733	17.55	10.11	10.81	139.2	
1734	17.57	8.15	11.94	99.9	
1735	17.58	7.82	11.96	79.5	
1736	17.60	7.48	12.01	67.6	
1737	17.62	7.13	12.54	66.6	
1738	17.63	6.87	12.30	60.8	
1739	17.65	6.96	12.06	60.6	
1740	17.67	7.27	12.03	63.0	
1741	17.68	7.80	10.95	71.5	
1742	17.70	8.72	10.23	76.6	
1743	17.72	9.35	10.78	78.1	
1744	17.73	9.05	10.26	68.0	
1745	17.75	9.68	9.49	72.2	
1746	17.77	10.41	9.60	84.8	
1747	17.78	10.25	10.01	74.6	
1748	17.80	9.59	10.88	68.2	
1749	17.82	8.97	11.07	63.6	
1750	17.83	8.38	11.97	58.3	
1751	17.85	7.37	12.59	55.1	
1752	17.87	6.96	12.53	54.5	
1753	17.88	6.65	12.65	52.3	
1754	17.90	6.85	12.08	52.1	
1755	17.92	7.40	11.78	57.1	
1756	17.93	7.66	11.87	56.8	
1757	17.95	8.03	10.57	60.6	
1758	17.97	9.13	9.73	69.2	
1759	17.98	10.25	9.29	82.2	
1800	18.00	10.78	8.71	92.3	
1801	18.02	11.32	8.90	102.4	
1802	18.03	11.35	8.69	105.3	
1803	18.05	11.46	8.85	107.9	
Average=		8.49	11.25	68.54	76.88
Min=		6.65	8.69	46.40	59.10
Max=		11.46	12.84	139.20	93.50

```
MR2IN

   TIME                  O2       CO2        CO       SO2
                         (%)      (%)      (ppm)     (ppm)
Std Dev=                 .90      .82      11.82      8.72
Variance=                .81      .67     139.71     75.96
```

init. lk chk ok

```
RUN#3 MID MERC
12/11/97
MIDPOINT
8910-L02-12
GWS
08:34
 0  O2    1.53
 1 CO2    3.33
08:35
 0  O2    1.39
 1 CO2    2.25
08:36
 0  O2    1.32
 1 CO2    1.75
08:37
 0  O2    1.27
 1 CO2    1.45
08:38
 0  O2    1.24
 1 CO2    1.34
08:39
 0  O2    1.19
 1 CO2    1.27
08:40
 0  O2    1.13
 1 CO2    1.21
08:41
 0  O2    1.10
 1 CO2    1.19
08:42
 0  O2    1.02
 1 CO2    1.18
08:43
 0  O2    0.99
 1 CO2    1.17
08:43            IN ZERO
 0  O2    0.99
 1 CO2    1.17
08:45
 0  O2   53.44
 1 CO2   51.27
08:46
 0  O2   51.98
 1 CO2   71.38
08:47
 0  O2   49.97
 1 CO2   76.32
08:48
 0  O2   49.27
 1 CO2   77.38
08:49
 0  O2   48.88
 1 CO2   77.67
08:50
 0  O2   48.72
 1 CO2   77.76
08:51
 0  O2   48.49
 1 CO2   77.84
08:52
 0  O2   48.39
 1 CO2   77.90
08:53
 0  O2   48.29
 1 CO2   77.91
08:53            IN SPAN
 0  O2   48.29     12.09
 1 CO2   77.91     12.38
```

```
  1 10:21
10.43 75.20
 2.41 11.27
  2 10:22
 1.47 76.45
 0.12 11.61
  3 10:23
 1.22 77.42
 0.06 11.87
  4 10:24
 1.12 77.84
 0.03 11.98
  5 10:25
 1.13 78.02
 0.04 12.03
  6 10:26
 1.05 78.14
 0.02 12.06
  7 10:27
 1.03 78.07
 0.01 12.04
  8 10:28
 1.02 78.07
 0.01 12.05
  9 10:29
 0.97 78.07
-0.00 12.05
 10 10:30
 0.97 78.14
-0.00 12.06
 11 10:31
 0.91 78.13
-0.02 12.06
 12 10:38
51.32 19.94
12.86  1.32
 13 10:39
51.10 12.93
12.81  0.72
 14 10:40
50.97  7.73
12.77  0.37
 15 10:41
50.88  4.91
12.75  0.21
 16 10:58
31.66 35.15
 7.69  3.13
 17 10:59
17.34 65.58
 4.18  8.87
 18 11:00
15.96 75.70
 3.83 11.41
 19 11:01
15.62 77.22
 3.74 11.81
 20 11:02
15.58 77.69
 3.73 11.94
 21 11:03
15.53 77.78
 3.72 11.96
 22 11:04
15.54 77.81
 3.72 11.97
 23 11:05
15.48 77.83
 3.70 11.96
```

Post cyl Bal 3172 12.40% CO2

Post cyl BAL 936 14.01% O2

old std

initial lk chk ok

```
RUN#2 MERC
12/10/97
MIDPOINT
8910L02-12
GWS
08:31
 0  O2    3.35
 1 CO2    2.86
08:32
 0  O2    0.75
 1 CO2    2.12
08:33
 0  O2    0.73
 1 CO2    1.93
08:34
 0  O2    0.74
 1 CO2    1.83
08:35
 0  O2    0.72
 1 CO2    1.80
08:36
 0  O2    0.72
 1 CO2    1.78
08:37
 0  O2    0.70
 1 CO2    1.77
08:38
 0  O2    0.67
 1 CO2    1.75
08:39
 0  O2    0.66
 1 CO2    1.72
08:40
 0  O2    0.67
 1 CO2    1.72
08:41
 0  O2    0.62
 1 CO2    1.74
08:42
 0  O2    0.66
 1 CO2    1.70
08:43
 0  O2    0.65
 1 CO2    1.71
08:44
 0  O2    0.58
 1 CO2    1.70
08:45
 0  O2    0.60
 1 CO2    1.66
08:46
 0  O2    0.58
 1 CO2    1.65
08:47
```

```
 1 CO2    1.60
08:47            IN ZERO
 0  O2    0.38
 1 CO2    1.60
08:50
 0  O2   20.06
 1 CO2   72.65
08:51
 0  O2   17.04
 1 CO2   76.84
08:52
 0  O2   16.82
 1 CO2   77.54
08:53
 0  O2   16.69
 1 CO2   77.73
08:54
 0  O2   16.63
 1 CO2   77.82
08:55
 0  O2   16.64
 1 CO2   77.85
08:55            IN SPAN
 1 CO2   77.85     12.00
09:14
 0  O2   56.58
 1 CO2    3.11
09:15
 0  O2   55.51
 1 CO2    2.42
09:16
 0  O2   55.39
 1 CO2    2.15
09:17
 0  O2   55.31
 1 CO2    2.02
09:17            IN SPAN
 0  O2   55.31     14.01
   1 10:00
 60.38 59.59
 15.31  7.51
   2 10:01
 63.86 54.11
 16.28  6.36
   3 10:02
 66.81 47.26
 16.95  5.06
   4 10:03
 66.49 46.30
 16.87  4.89
   5 10:04
 66.43 46.14
 16.86  4.86
   6 10:05
 63.96 50.37
 16.22  5.63
   7 10:06
 54.38 64.71
 13.77  8.67
   8 10:07
 64.89 54.12
 16.46  6.36
   9 10:08
 53.16 66.09
 13.46  8.39
  10 10:09
 51.96 66.06
 13.15  8.98
  11 10:10
 47.37 60.29
 11.98  7.66
  12 10:11
 47.53 58.49
 12.02  7.27
  13 10:12
 51.50 59.10
 13.03  7.40
  14 10:13
 41.71 46.41
 10.53  4.91
  15 10:14
 58.41 38.35
 14.80  3.58
  16 10:17
 62.65 46.89
 15.89  4.99
  17 10:18
 77.85 11.10
 19.57  0.56
  18 10:19
 27.98 10.95
  7.01  0.55
  19 10:20
 67.87  9.60
 17.22  0.46
  20 10:21
 69.71  8.72
 17.70  0.41
  21 10:22
 67.60  7.86
 17.15  0.35
  22 10:23
 69.39 28.04
 17.74  2.17
  23 10:24
 66.29 35.79
 16.82  3.19
  24 10:25
 58.72 46.49
 14.88  4.92
  25 10:26
 55.47 44.27
 14.05  4.53
  26 10:27
 57.21 52.59
 14.50  6.06
  27 10:28
 57.47 53.75
 14.56  6.29
  28 10:29
 56.47 58.23
 14.31  7.22
  29 10:30
 55.39 50.89
 14.03  5.73
  30 10:31
 50.48 54.73
 12.77  8.67
  31 10:32
 46.14 64.68
 11.66  8.66
  32 10:33
 40.84 68.14
 10.30  9.48
  33 10:34
 40.32 68.06
 10.17  9.47
  34 10:35
 42.27 69.75
 10.67  9.88
  35 10:36
 44.13 68.28
 11.15  9.52
  36 10:37
 43.75 61.08
 11.05  7.84
  37 10:38
 38.89 70.39
  9.81 10.04
  38 10:39
 52.98 67.12
 13.41  9.24
  39 10:40
 43.46 71.84
 10.98 10.41
  40 10:41
 49.89 66.55
 12.42  9.10
  41 10:42
 43.49 71.41
 10.98 10.30
  42 10:43
 40.16 55.06
 10.17  5.55
  43 10:44
 54.25 38.28
 16.30  3.56
  44 12:39
 54.37 67.44
```

```
 13.92  9.32
  45 12:40
 34.93 75.73
  8.79 11.43
  46 12:41
 32.43 76.58
  8.15 11.66
  47 12:42
 29.29 77.43
  7.35 11.89
  48 12:43
 29.49 76.38
  7.40 11.60
  49 12:44
 28.61 77.63
  7.17 11.94
  50 12:45
 29.99 77.37
  7.53 11.87
  51 12:46
 28.62 77.69
  7.18 11.96
  52 12:47
 30.97 77.18
  7.78 11.82
  53 12:48
 31.93 77.05
  8.03 11.78
  54 12:49
 33.75 76.37
  8.49 11.60
  55 12:50
 37.03 75.37
  9.33 11.33
  56 12:51
 37.06 75.36
  9.34 11.33
  57 12:52
 35.70 75.78
  8.99 11.44
  58 12:53
 35.21 75.91
  8.86 11.48
  59 12:54
 34.96 76.03
  8.80 11.51
  60 12:55
 31.71 76.92
  7.97 11.75
  61 12:56
 30.05 77.18
  7.54 11.82
  62 12:57
 28.72 77.67
  7.20 11.95
  63 12:58
 29.15 77.78
  7.31 11.98
  64 12:59
 31.04 77.89
  7.80 12.01
  65 13:00
 27.58 77.91
  6.91 12.02
  66 13:01
 29.96 77.51
  7.52 11.91
  67 13:02
 29.04 77.37
  7.28 11.87
  68 13:03
 30.80 77.42
  7.73 11.88
  69 13:04
 35.01 76.88
  8.81 11.74
  70 13:05
 38.95 77.18
  9.82 11.82
  71 13:06
 34.90 77.82
  8.79 11.99
  72 13:07
 36.71 77.93
```

START Run #2 c1245

```
  9.25 12.02
  73 13:08
 27.39 78.00
  6.86 12.04
  74 13:09
 28.34 77.82
  7.11 11.99
  75 13:10
 29.60 77.80
  7.43 11.99
  76 13:11
 28.51 77.78
  7.15 11.98
  77 13:12
 28.15 77.72
 [illegible]
  78 13:13
 29.42 77.54
  7.38 11.92
  79 13:14
 32.05 77.81
  8.05 11.99
  80 13:15
 31.59 77.25
  7.94 11.84
  81 13:16
 33.17 76.43
  8.34 11.62
  82 13:17
 31.10 76.93
  7.81 11.75
  83 13:18
 34.29 76.43
  8.63 11.62
  84 13:19
 32.70 76.65
  8.22 11.67
  85 13:20
 33.10 76.68
  8.32 11.68
  86 13:21
 32.93 76.72
  8.28 11.69
  87 13:22
 31.50 76.54
  7.91 11.65
  88 13:23
 30.72 76.92
  7.71 11.75
  89 13:24
 27.86 77.61
  6.98 11.94
  90 13:25
 27.30 77.67
  6.84 11.95
  91 13:26
 26.14 78.04
  6.54 12.05
  92 13:27
 27.42 77.82
 [illegible]
  7.72 11.64
 108 13:43
 31.28 76.87
  7.86 11.73
 109 13:44
 28.05 77.47
  7.03 11.90
 110 13:45
 30.25 77.04
  7.59 11.78
 111 13:46
 33.14 76.72
  8.33 11.69
 112 13:47
 29.57 77.49
  7.42 11.99
 113 13:48
 27.46 77.66
  6.88 11.95
 114 13:49
 30.93 77.20
  7.77 11.82
 115 13:50
```

```
 31.06 76.71
  7.80 11.69
 116 13:51
 31.44 76.76
  7.90 11.71
 117 13:52
 30.21 76.92
  7.58 11.75
 118 13:53
 29.06 76.41
  7.29 11.61
 119 13:54
 29.61 77.02
  7.43 11.78
 120 13:55
 29.91 77.23
  7.51 11.83
 121 13:56
 27.31 77.58
  6.84 11.93
 122 13:57
 29.58 77.48
  7.42 11.90
 123 13:58
 26.03 78.09
  6.51 12.07
 124 13:59
 26.35 78.18
  6.60 12.09
 125 14:00
 22.71 78.55
  5.66 12.19
 126 14:01
 27.83 77.77
  6.97 11.98
 127 14:02
 31.73 76.68
  7.97 11.68
 128 14:03
 30.17 76.77
  7.57 11.71
 129 14:04
 32.00 76.52
  8.04 11.64
 130 14:05
 28.78 73.32
  7.22 10.79
 131 14:06
 28.00 77.39
  7.02 11.88
 132 14:07
 29.57 77.21
  7.42 11.83
 133 14:08
 31.08 77.14
  7.81 11.81
 134 14:09
 30.79 77.00
  7.73 11.77
 135 14:10
 30.32 77.25
  7.61 11.84
 136 14:11
 29.83 77.08
  7.49 11.79
 137 14:12
 31.63 76.74
  7.95 11.70
 138 14:13
 33.23 76.30
  8.36 11.58
 139 14:14
 30.08 76.21
  7.55 11.56
 140 14:15
 32.14 75.72
  8.08 11.59
 141 14:16
 33.03 76.24
  8.31 11.57
 142 14:17
 37.13 74.42
  9.35 11.08
 143 14:18
 46.41 69.26
 11.73  9.76
 144 14:19
 48.70 69.94
 12.32  9.93
 145 14:26
 27.03 76.49
  6.77 11.63
 146 1-:27
 28.56 77.17
  7.16 11.82
 147 14:28
 29.27 76.14
  7.39 11.57
 148 14:29
 31.48 77.15
  7.91 11.81
 149 14:30
 32.58 76.86
  8.19 11.73
 150 14:31
 32.95 76.59
  8.29 11.66
 151 14:32
 33.16 76.52
  8.34 11.64
```

Port change

← RESTART

(NOTE: Best Copy Available)

```
152 14:33
31.73 76.72
 7.97 11.69
153 14:34
29.58 77.13
 7.42 11.80
154 14:35
30.48 76.99
 7.65 11.77
155 14:36
29.44 77.25
 7.39 11.84
156 14:37
29.96 77.08
 7.52 11.79
157 14:38
27.99 77.44
 7.02 11.89
158 14:39
25.35 77.58
 6.34 11.93
159 14:40
26.45 77.86
 6.62 12.00
160 14:41
26.88 77.79
 6.73 11.98
161 14:42
27.53 77.93
 6.90 12.02
162 14:43
24.72 78.13
 6.18 12.08
163 14:44
23.17 78.35
 5.78 12.14
164 14:45
28.57 75.84
 7.16 11.46
165 14:46
20.96 78.39
 5.22 12.15
166 14:47
25.43 78.04
 6.36 12.05
167 14:48
30.00 76.85
 7.53 11.73
168 14:49
28.82 77.17
 7.23 11.82
169 14:50
31.82 75.29
 8.00 11.31
170 14:51
36.56 75.62
 9.21 11.40
171 14:52
30.31 74.34
 7.61 11.06
172 14:53
36.48 75.63
 9.19 11.40
173 14:54
29.84 76.14
 7.49 11.54
174 14:55
32.13 75.57
 8.08 11.38
175 14:56
34.58 75.79
 8.70 11.44
176 14:57
30.47 76.40
 7.65 11.61
177 14:58
31.57 76.64
 7.93 11.67
178 14:59
32.98 75.30
 8.29 11.31
179 15:00
30.19 77.12
```

```
180 15:01
22.68 77.81
 5.66 11.99
181 15:02
22.71 78.29
 5.67 12.12
182 15:03
25.71 78.35
 6.43 12.14
183 15:04
24.03 78.10
 6.00 12.07
184 15:05
28.68 77.29
 7.19 11.85
185 15:06
31.84 77.18
 8.00 11.82
186 15:07
33.79 76.79
 8.50 11.71
187 15:08
32.54 76.83
 8.18 11.73
188 15:09
30.96 76.90
 7.78 11.74
189 15:10
31.20 76.80
 7.84 11.72
190 15:11
31.06 76.82
 7.80 11.72
191 15:12
27.88 77.17
 6.99 11.82
192 15:13
28.51 77.18
 7.15 11.82
193 15:14
28.69 77.41
 7.19 11.88
194 15:15
28.56 77.45
 7.16 11.89
195 15:16
28.27 72.92
 7.09 10.69
196 15:17
29.38 75.29
 7.37 11.31
197 15:18
29.78 77.30
 7.47 11.85
198 15:19
25.48 75.83
 6.37 11.45
199 15:20
28.49 77.40
 7.14 11.88
200 15:21
29.09 77.50
 7.30 11.91
201 15:22
27.50 77.75
 6.89 11.98
202 15:35
36.15 76.45
 9.10 11.62
203 15:37
36.17 76.41
 9.11 11.61
204 15:38
36.20 76.37
 9.12 11.60
205 15:39
36.18 76.41
 9.11 11.61
206 15:40
36.13 76.39
 9.10 11.60
207 15:41
36.19 76.42
```

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208 15:42
36.15 76.41
 9.11 11.61
209 15:43
36.12 76.43
 9.10 11.62
210 15:44
35.96 76.41
 9.06 11.61
211 15:45
35.86 76.42
 9.03 11.61
212 15:46
35.65 76.41
 8.98 11.61
213 15:47
35.49 76.37
 8.94 11.60
214 15:48
35.28 76.41
 8.88 11.61
215 15:49
35.15 76.48
 8.85 11.63
216 15:50
34.96 76.73
 8.80 11.70
217 15:51
34.94 77.04
 8.80 11.78
218 15:52
34.98 77.17
 8.81 11.82
219 15:53
35.15 77.16
 8.85 11.81
220 15:54
35.46 77.10
 8.93 11.80
221 15:55
35.69 77.04
 8.99 11.78
222 15:56
36.05 76.98
 9.08 11.76
223 15:57
36.33 76.91
 9.15 11.75
224 15:58
36.57 76.76
 9.21 11.70
225 15:59
36.81 76.65
 9.27 11.68
226 16:00
36.96 76.55
 9.31 11.65
227 16:01
37.13 76.44
 9.36 11.62
228 16:02
37.27 76.31
 9.39 11.58
229 16:03
37.35 76.29
 9.41 11.58
230 16:04
37.55 76.31
 9.46 11.59
231 16:05
38.07 76.28
 9.60 11.57
232 16:06
38.60 76.26
 9.73 11.57
233 16:07
39.07 76.25
 9.85 11.57
234 16:08
39.53 76.27
 9.97 11.57
235 16:09
39.73 76.27
 9.92 11.57
```

```
236 16:10
37.45 76.22
 9.44 11.56
237 16:11
37.41 76.18
 9.43 11.55
238 16:12
37.52 76.14
 9.45 11.54
239 16:13
37.68 76.09
 9.50 11.53
240 16:14
37.82 76.00
 9.53 11.50
241 16:15
38.37 75.97
 9.67 11.49
242 16:16
38.96 75.90
 9.82 11.47
243 16:17
38.90 75.86
 9.81 11.46
244 16:18
38.79 75.83
 9.78 11.45
245 16:19
38.78 75.76
 9.78 11.44
246 16:20
38.76 75.74
 9.77 11.43
247 16:21
38.83 75.64
 9.79 11.40
248 16:22
38.91 75.58
 9.81 11.39
249 16:23
[illegible] 75.56
 9.86 11.38
250 16:24
39.31 75.51
 9.91 11.37
251 16:25
39.42 75.50
 9.94 11.37
252 16:26
39.76 75.41
10.03 11.34
253 16:27
40.00 75.41
10.09 11.34
254 16:28
40.34 75.40
10.18 11.34
255 16:29
40.80 75.30
10.29 11.31
256 16:30
41.25 75.30
10.41 11.31
257 16:31
41.65 75.29
10.51 11.31
258 16:32
42.08 75.24
10.62 11.30
259 16:33
42.38 75.16
10.70 11.28
260 16:34
42.64 75.14
10.77 11.27
261 16:35
42.91 75.07
10.83 11.25
262 16:36
43.02 75.02
10.86 11.24
263 16:37
43.03 75.00
10.87 11.23
```

```
43.06 74.95
10.87 11.22
265 16:39
42.95 74.91
10.85 11.21
266 16:40
42.89 74.84
10.83 11.19
267 16:41
42.76 74.84
10.80 11.19
268 16:42
42.56 74.77
10.75 11.17
269 16:43
42.44 74.72
10.72 11.16
270 16:44
42.37 74.64
10.70 11.14
271 16:45
42.22 74.61
10.66 11.13
272 16:46
42.11 74.57
10.63 11.12
273 16:47
42.10 74.52
10.63 11.11
274 16:48
42.10 74.54
10.63 11.11
275 16:49
42.06 74.48
10.62 11.10
276 16:50
42.12 74.47
10.63 11.09
277 16:51
40.78 74.39
10.19 11.07
278 16:52
42.36 74.33
10.69 11.06
279 16:53
42.55 74.31
10.74 11.05
280 16:54
42.73 74.28
10.79 11.04
281 16:55
43.05 74.21
10.87 11.03
282 16:56
43.37 74.17
10.95 11.01
283 16:57
43.79 74.09
11.06 10.99
284 16:58
44.24 74.05
11.18 10.98
285 16:59
44.66 73.99
11.26 10.97
286 17:00
45.06 73.91
11.39 10.95
287 17:01
42.73 73.87
10.79 10.67
288 17:02
26.56 75.48
 6.65 11.36
289 17:03
30.73 76.29
 7.72 11.58
290 17:04
32.35 76.44
 8.13 11.62
291 17:05
31.79 76.49
 7.99 11.63
292 17:06
```

Flow dropped to zero reset

Ignore data between 1535 T1701

```
 7.58 11.76
293 17:07
29.11 77.35
 7.30 11.87
294 17:08
28.01 77.63
 7.02 11.94
295 17:09
28.91 77.63
 7.25 11.94
296 17:10
30.35 77.46
 7.62 11.89
297 17:11
31.31 77.18
 7.87 11.82
298 17:12
33.23 76.87
 8.36 11.74
299 17:13
32.08 76.99
 8.06 11.77
300 17:14
34.38 76.59
 8.63 11.66
301 17:15
32.24 76.82
 8.10 11.72
302 17:16
31.49 77.03
 7.91 11.78
303 17:17
37.68 76.08
 9.47 11.52
304 17:18
40.17 75.11
10.13 11.26
305 17:19
37.11 75.53
 9.35 11.37
306 17:20
38.43 75.36
 9.69 11.33
307 17:21
38.05 75.41
 9.59 11.34
308 17:22
36.31 75.77
 9.15 11.44
309 17:23
36.96 75.74
 9.31 11.43
310 17:24
38.93 75.41
 9.82 11.34
311 17:25
30.96 76.77
 7.77 11.71
312 17:26
26.94 77.89
 6.75 12.01
313 17:27
25.75 78.29
 6.44 12.12
314 17:28
26.76 78.20
 6.70 12.10
315 17:29
34.35 76.34
 8.64 11.75
316 17:30
36.49 76.17
 9.19 11.54
317 17:31
33.26 76.57
 8.37 11.65
318 17:32
39.60 75.40
 9.99 11.34
319 17:33
25.62 77.81
 6.41 11.99
320 17:34
25.78 77.83
 7.47 11.87
```

```
321 17:35
27.66 77.87
 6.93 12.03
322 17:36
25.61 78.27
 6.41 12.12
323 17:37
26.08 78.35
 6.53 12.14
324 17:38
26.36 78.31
 6.60 12.13
325 17:39
27.86 78.09
 6.98 12.07
326 17:40
31.52 77.54
 7.92 11.92
327 17:41
33.96 76.92
 8.54 11.75
328 17:42
35.35 76.42
 8.90 11.61
329 17:43
33.95 76.68
 8.54 11.68
330 17:44
37.43 75.94
 9.43 11.48
331 17:45
39.88 75.17
10.06 11.28
332 17:46
38.00 75.45
 9.58 11.35
333 17:47
34.20 76.30
 8.60 11.58
334 17:48
33.10 76.73
 8.32 11.70
335 17:49
29.75 77.41
 7.47 11.88
336 17:50
25.75 78.25
 6.44 12.11
337 17:51
26.35 78.35
 6.60 12.14
338 17:52
24.12 78.64
 6.02 12.22
339 17:53
26.83 78.34
 6.72 12.14
340 17:54
28.78 77.95
 7.20 12.03
341 17:55
28.43 77.94
 7.13 12.03
342 17:56
32.71 77.14
 8.22 11.81
343 17:57
35.53 76.37
 8.95 11.60
344 17:58
39.62 75.20
 9.99 11.29
345 17:59
41.17 74.55
10.39 11.11
346 18:00
41.44 74.29
10.46 11.05
347 18:01
40.27 74.02
10.16 10.98
348 18:02
36.22 73.50
 9.12 10.94
349 18:03
```

```
 40.46 74.40
 10.21 11.07
18:05
 0  02     0.88
 1 CO2    41.99
18:06
 0  02     0.60
 1 CO2    24.21
18:07
 0  02     0.54
 1 CO2    12.60
18:08
 0  02     0.50
 1 CO2     6.82
18:09
 0  02     0.46
 1 CO2     4.76
18:10
 0  02     0.48
 1 CO2     3.81
18:11
 0  02     0.45
 1 CO2     3.30
18:12
 0  02     0.41
 1 CO2     2.99
18:13
 0  02     0.42
 1 CO2     2.78
18:14
 0  02     0.41
 1 CO2     2.69
18:15
 0  02     0.38
 1 CO2     2.50
18:16
 0  02     0.35
 1 CO2     2.47
18:17
 0  02     0.37
 1 CO2     2.39
18:18
 0  02     0.36
 1 CO2     2.27
18:19
 0  02     0.33
 1 CO2     2.24
18:20
 0  02     0.39
 1 CO2     2.21
18:21
 0  02     0.41
 1 CO2     2.15
18:22
 0  02     0.37
 1 CO2     2.09
18:23
 0  02     0.36
 1 CO2     2.07
18:24
 0  02     0.79
 1 CO2     1.88
18:25
 0  02     0.35
 1 CO2     1.87
18:26
 0  02     1.07
 1 CO2     1.89
18:27
 0  02     0.35
 1 CO2     1.61
18:28
 0  02     1.52
 1 CO2     1.92
18:29
 0  02     0.39
 1 CO2     1.81
18:30
 0  02     1.21
 1 CO2     1.74
18:31
 0  02     1.16
 1 CO2     1.64
18:32
 0  02     0.88
 1 CO2
18:33
 0  O2    0.27
 1 CO2    1.99
18:34
 0  O2    0.77
 1 CO2    1.74
18:35
 0  O2    1.41
 1 CO2    1.87
18:36
 0  O2    0.24
 1 CO2    1.59
18:37
 0  O2    0.38
 1 CO2    1.73
18:38
 0  O2    0.34
 1 CO2    1.56
18:39
 0  O2    1.24
 1 CO2    1.76
18:40
 0  O2    0.28
 1 CO2    1.74
18:41
 0  O2    0.32
 1 CO2    1.79
18:42
 0  O2    0.28
 1 CO2    1.67
18:43
 0  O2    1.29
 1 CO2    1.71
18:44
 0  O2    0.35
 1 CO2    1.57
18:45
 0  O2    1.30
 1 CO2    1.58
18:46
 0  O2    0.34
 1 CO2    1.67
18:47
 0  O2    0.51
 1 CO2    1.52
18:48
 0  O2    0.28
 1 CO2    1.59
18:49
 0  O2    2.09
 1 CO2    1.75
18:50
 0  O2    0.45
 1 CO2    1.71
18:51
 0  O2    0.24
 1 CO2    1.57
18:52
 0  O2    0.39
 1 CO2    1.58
18:53
 0  O2    0.68
 1 CO2    1.64
18:54
 0  O2    0.29
 1 CO2    1.68
18:55
 0  O2    1.26
 1 CO2    1.56
18:56
 0  O2    1.95
 1 CO2    1.66
18:57
 0  O2    0.34
 1 CO2    1.59
18:58
 0  O2    0.76
 1 CO2    1.42
18:59
 0  O2    0.28
 1 CO2    1.54
19:00
 0  O2    0.29
 1 CO2    1.64
19:01
```

```
 0  O2
 1 CO2    1.69
19:02
 0  O2    0.29
 1 CO2    1.65
19:03
 0  O2    0.31
 1 CO2    1.64
19:03              FIN ZERO
 0  O2    0.31
 1 CO2    1.64
19:23
 0  O2   16.71
 1 CO2   76.33
19:24
 0  O2   16.27
 1 CO2   77.41
19:25
 0  O2   16.19
 1 CO2   77.72
19:26
 0  O2   16.14
 1 CO2   77.83
19:27
 0  O2   16.09
 1 CO2   77.87
19:28
 0  O2   16.05
 1 CO2   77.88
19:29
 0  O2   16.08
 1 CO2   77.35
19:29             FIN SPAN
 1 CO2   77.35      12.00
19:35
 0  O2   54.43
 1 CO2   11.91
19:36
 0  O2   54.35
 1 CO2    7.48
19:37
 0  O2   54.14
 1 CO2    5.75
19:38
 0  O2   54.38
 1 CO2    4.25
19:39
 0  O2   54.10
 1 CO2    3.60
19:40
 0  O2   54.11
 1 CO2    3.15
19:40             FIN SPAN
 0  O2   54.11      14.01
```

final
cal
OK

MR2MID

TIME		O2 (%)	CO2 (%)
1245	12.75	7.63	11.86
1246	12.77	7.27	11.94
1247	12.78	7.88	11.81
1248	12.80	8.13	11.77
1249	12.82	8.60	11.59
1250	12.83	9.45	11.32
1251	12.85	9.45	11.32
1252	12.87	9.10	11.43
1253	12.88	8.98	11.46
1254	12.90	8.91	11.49
1255	12.92	8.07	11.73
1256	12.93	7.64	11.81
1257	12.95	7.30	11.94
1258	12.97	7.41	11.97
1259	12.98	7.90	12.00
1300	13.00	7.01	12.00
1301	13.02	7.62	11.90
1302	13.03	7.38	11.86
1303	13.05	7.84	11.87
1304	13.07	8.92	11.72
1305	13.08	9.94	11.81
1306	13.10	8.90	11.98
1307	13.12	9.36	12.01
1308	13.13	6.96	12.03
1309	13.15	7.20	11.98
1310	13.17	7.53	11.97
1311	13.18	7.25	11.97
1312	13.20	7.15	11.95
1313	13.22	7.48	11.90
1314	13.23	8.16	11.98
1315	13.25	8.04	11.82
1316	13.27	8.45	11.60
1317	13.28	7.91	11.74
1318	13.30	8.74	11.60
1319	13.32	8.33	11.66
1320	13.33	8.43	11.67
1321	13.35	8.39	11.68
1322	13.37	8.02	11.63
1323	13.38	7.82	11.73
1324	13.40	7.08	11.92
1325	13.42	6.93	11.94
1326	13.43	6.63	12.04
1327	13.45	6.96	11.93
1328	13.47	6.69	12.11
1329	13.48	7.08	12.01
1330	13.50	6.84	12.03
1331	13.52	6.35	12.10
1332	13.53	7.36	11.95
1333	13.55	8.13	11.77
1334	13.57	7.51	11.87
1335	13.58	7.26	11.94
1336	13.60	7.37	11.92

MR2MID

TIME		O2 (%)	CO2 (%)
1337	13.62	8.02	11.78
1338	13.63	8.19	11.68
1339	13.65	8.12	11.72
1340	13.67	8.54	11.56
1341	13.68	7.85	11.56
1342	13.70	7.82	11.63
1343	13.72	7.96	11.72
1344	13.73	7.13	11.88
1345	13.75	7.69	11.77
1346	13.77	8.44	11.68
1347	13.78	7.52	11.89
1348	13.80	6.97	11.94
1349	13.82	7.87	11.81
1350	13.83	7.90	11.66
1351	13.85	8.00	11.69
1352	13.87	7.68	11.73
1353	13.88	7.39	11.60
1354	13.90	7.53	11.76
1355	13.92	7.61	11.82
1356	13.93	6.94	11.91
1357	13.95	7.52	11.89
1358	13.97	6.61	12.05
1359	13.98	6.69	12.08
1400	14.00	5.75	12.18
1401	14.02	7.07	11.97
1402	14.03	8.08	11.67
1403	14.05	7.67	11.69
1404	14.07	8.15	11.63
1405	14.08	7.32	10.78
1406	14.10	7.11	11.86
1407	14.12	7.52	11.81
1408	14.13	7.91	11.79
1409	14.15	7.83	11.76
1410	14.17	7.71	11.82
1411	14.18	7.59	11.78
1412	14.20	8.05	11.69
1413	14.22	8.46	11.57
1414	14.23	7.65	11.54
1415	14.25	8.18	11.57
1416	14.27	8.41	11.55
1417	14.28	9.47	11.07
1418	14.30	11.87	9.75
1419	14.32	12.46	9.92
1426	14.43	6.86	11.62
1427	14.45	7.26	11.80
1428	14.47	7.18	11.55
1429	14.48	8.01	11.80
1430	14.50	8.30	11.72
1431	14.52	8.39	11.65
1432	14.53	8.45	11.63
1433	14.55	8.08	11.68
1434	14.57	7.52	11.79
1435	14.58	7.75	11.75

MR2MID

TIME		O2 (%)	CO2 (%)
1436	14.60	7.49	11.82
1437	14.62	7.62	11.78
1438	14.63	7.11	11.88
1439	14.65	6.43	11.91
1440	14.67	6.71	11.99
1441	14.68	6.82	11.97
1442	14.70	6.99	12.01
1443	14.72	6.27	12.06
1444	14.73	5.87	12.13
1445	14.75	7.26	11.44
1446	14.77	5.30	12.14
1447	14.78	6.45	12.04
1448	14.80	7.63	11.72
1449	14.82	7.33	11.80
1450	14.83	8.10	11.30
1451	14.85	9.32	11.39
1452	14.87	7.71	11.05
1453	14.88	9.30	11.39
1454	14.90	7.59	11.52
1455	14.92	8.18	11.37
1456	14.93	8.81	11.43
1457	14.95	7.75	11.59
1458	14.97	8.04	11.66
1459	14.98	8.40	11.30
1500	15.00	7.68	11.79
1501	15.02	5.74	11.98
1502	15.03	5.75	12.11
1503	15.05	6.52	12.13
1504	15.07	6.09	12.06
1505	15.08	7.29	11.84
1506	15.10	8.11	11.81
1507	15.12	8.61	11.70
1508	15.13	8.29	11.71
1509	15.15	7.88	11.73
1510	15.17	7.94	11.70
1511	15.18	7.90	11.71
1512	15.20	7.08	11.80
1513	15.22	7.25	11.81
1514	15.23	7.29	11.87
1515	15.25	7.26	11.88
1516	15.27	7.18	10.68
1517	15.28	7.47	11.30
1518	15.30	7.57	11.84
1519	15.32	6.46	11.44
1520	15.33	7.24	11.87
1521	15.35	7.40	11.89
1522	15.37	6.98	11.96
1535	15.58		
1701	17.02		
1702	17.03	6.74	11.35
1703	17.05	7.82	11.56
1704	17.07	8.24	11.61
1705	17.08	8.09	11.62

MR2MID

TIME		O2 (%)	CO2 (%)
1706	17.10	7.68	11.75
1707	17.12	7.40	11.85
1708	17.13	7.12	11.93
1709	17.15	7.35	11.93
1710	17.17	7.72	11.88
1711	17.18	7.97	11.81
1712	17.20	8.46	11.72
1713	17.22	8.17	11.75
1714	17.23	8.76	11.65
1715	17.25	8.21	11.71
1716	17.27	8.01	11.76
1717	17.28	9.59	11.51
1718	17.30	10.26	11.25
1719	17.32	9.47	11.36
1720	17.33	9.81	11.32
1721	17.35	9.71	11.33
1722	17.37	9.26	11.43
1723	17.38	9.43	11.42
1724	17.40	9.94	11.33
1725	17.42	7.88	11.69
1726	17.43	6.84	12.00
1727	17.45	6.53	12.11
1728	17.47	6.79	12.08
1729	17.48	8.75	11.74
1730	17.50	9.31	11.53
1731	17.52	8.47	11.64
1732	17.53	10.11	11.33
1733	17.55	6.50	11.98
1734	17.57	7.57	11.92
1735	17.58	7.03	12.02
1736	17.60	6.50	12.10
1737	17.62	6.62	12.13
1738	17.63	6.69	12.11
1739	17.65	7.08	12.05
1740	17.67	8.02	11.90
1741	17.68	8.65	11.73
1742	17.70	9.01	11.60
1743	17.72	8.65	11.67
1744	17.73	9.55	11.47
1745	17.75	10.18	11.27
1746	17.77	9.70	11.34
1747	17.78	8.71	11.57
1748	17.80	8.43	11.68
1749	17.82	7.57	11.87
1750	17.83	6.53	12.10
1751	17.85	6.69	12.13
1752	17.87	6.11	12.21
1753	17.88	6.81	12.12
1754	17.90	7.29	12.02
1755	17.92	7.22	12.01
1756	17.93	8.33	11.79
1757	17.95	9.06	11.59
1758	17.97	10.11	11.27

```
MR2MID

   TIME                  O2        CO2
                        (%)        (%)
    1759     17.98     10.51     11.10
    1800     18.00     10.58     11.03
    1801     18.02     10.28     10.96
    1802     18.03      9.24     10.83
    1803     18.05     10.33     11.06

Average=                7.89     11.72
Min=                    5.30      9.75
Max=                   12.46     12.21
Std Dev=                1.08       .33
Variance=               1.17       .11
```

```
MR2OUT
RUN#2 MERC
12-10-1987
OUTLET MERC
8910-L02-12
BWS
                0       1       2       3
            O2      CO2     SO2     NOx
08:40           0.39    0.86    3.15     1.76
08:41           0.37    0.87    3.03     1.70
08:42           0.36    0.83    2.94     1.73
08:43           0.34    0.89    2.91     1.67
08:44           0.32    0.87    2.86     1.66
08:45           0.31    0.81    2.84     1.61
08:46           0.33    0.79    2.79     1.63
08:47           0.30    0.85    2.75     1.64
08:48           0.29    0.84    2.71     1.63
08:49           0.29    0.80    2.70     1.61
08:50           0.30    0.86    2.69     1.63
08:51           0.29    0.84    2.69     1.58
08:52           0.28    0.91    2.68     1.61
08:52 INIT. ZERO
 0  O2    0.28
 1  CO2   0.91
 2  SO2   2.68
 3  NOx   1.61
08:57          10.18   71.46    2.72     1.57
08:58          15.48   81.14    2.68     1.56
08:59          16.89   82.90    2.69     1.58
09:00          16.61   82.94    2.68     1.58
09:01          16.40   82.95    2.69     1.57
09:01 INIT. SPAN
 1  CO2  82.95       12.00
09:03          51.40   12.34    2.99     1.48
09:04          53.66    2.75    2.85     1.58
09:05          52.74    1.33    2.84     1.59
09:06          53.89    1.07    2.80     1.56
09:07          54.41    1.00    2.76     1.58
09:08          54.59    1.06    2.72     1.55
09:09          54.64    0.97    2.71     1.58
09:10          54.69    1.01    2.70     1.51
09:11          54.71    0.98    2.67     1.57
09:12          54.70    0.89    2.65     1.55
09:12 INIT. SPAN
 0   O2  54.70       14.01
09:21           3.37    0.93    7.75     1.90
09:22           1.30    0.91    6.89     9.06
09:23           0.72    0.94    6.56    43.76
09:24           0.57    0.85    6.36    47.88
09:25           0.49    0.87    6.30    48.95
09:26           0.45    0.95    6.25    49.31
09:27           0.41    0.84    6.22    49.44
09:27 INIT. SPAN
 3  NOx  49.44      107.80
09:29           1.93    0.93   41.40    52.40
09:30           0.86    0.86   52.06    51.20
09:31           0.41    0.91   62.08    12.36
09:32           0.35    0.89   67.10     2.65
09:33           0.35    0.88   70.11     1.91
09:34           0.33    0.91   72.26     1.72
09:35           0.32    0.89   73.95     1.65
09:36           0.32    0.95   75.27     1.62
09:37           0.30    0.84   76.28     1.55
09:38           0.30    0.86   77.18     1.57
```

```
09:39           0.29    0.90   77.92     1.54
09:40           0.28    0.94   78.47     1.50
09:41           0.29    0.84   79.14     1.53
09:42           0.28    0.87   79.62     1.50
09:43           0.27    0.91   80.03     1.53
09:44           0.27    0.86   80.41     1.54
09:45           0.27    0.88   80.84     1.49
09:46           0.26    0.92   81.16     1.53
09:47           0.26    0.89   81.42     1.49
09:48           0.26    0.91   81.75     1.53
09:49           0.25    0.89   82.04     1.49
09:50           0.24    0.89   82.22     1.49
09:51           0.24    0.83   82.46     1.47
09:52           0.23    0.93   82.73     1.47
09:53           0.24    0.91   82.85     1.49
09:54           0.24    0.93   83.04     1.44
09:55           0.24    0.87   83.26     1.46
09:55 INIT. SPAN
 2  SO2  83.26       93.10

09:58   49.00   58.11  111.30     1.52
03:58   12.54    6.49   125.5     -0.2

09:59   55.10   50.10   46.70    22.80
09:59   14.11    5.07    50.9     47.8

10:00   62.31   36.01   28.41    43.76
10:00   15.97    2.97    29.7     95.0

10:01   62.86   34.77   21.96    41.09
10:01   16.11    2.81    22.3     89.0

10:02   66.71   25.91   18.27    32.40
10:02   17.10    1.79    18.0     69.4

10:03   68.52   21.76   15.55    26.49
10:03   17.57    1.39    14.9     56.1

10:04   68.44   21.74   13.48    19.59
10:04   17.55    1.39    12.5     40.5

10:05   68.34   22.09   11.81    15.59
10:05   17.52    1.42    10.5     31.5

10:06   60.50   38.93   11.84    15.03
10:06   15.50    3.36    10.6     30.2

10:07   61.88   38.01   11.39    18.73
10:07   15.86    3.24    10.1     38.6

10:08   62.06   39.27   11.21    29.93
10:08   15.91    3.41     9.9     63.8

10:09   56.74   48.82   12.24    30.95
10:09   14.54    4.86    11.0     66.1

10:10   56.86   48.34   12.65    31.97
10:10   14.57    4.78    11.5     68.4

10:11   58.29   45.94   12.65    39.43
10:11   14.93    4.39    11.5     85.2

10:12   57.56   47.23   12.68    38.13
10:12   14.75    4.60    11.6     82.3

10:13   58.23   45.96   12.40    36.31
10:13   14.92    4.40    11.2     78.2

10:14   60.89   40.83   11.96    35.77
10:14   15.61    3.63    10.7     77.0

10:15   65.19   32.44   11.05    33.45
10:15   16.71    2.52     9.7     71.8

10:16   66.39   30.39   10.32    27.34
10:16   17.02    2.28     8.8     58.0

10:17   71.09   19.37    9.16    21.21
```

```
10:17   18.23    1.18    7.5     44.2

10:18   74.47   12.21    7.82   17.41
10:18   19.10    0.63    5.9     35.6

10:19   78.55    4.69    6.73   12.33
10:19   20.15    0.20    4.7     24.2

10:20   79.50    2.86    8.21    7.87
10:20   20.40    0.12    6.4     14.1

10:21   79.69    2.42   12.98    4.52
10:21   20.45    0.10   11.9      6.5

10:22   79.78    2.22    9.90    3.60
10:22   20.47    0.10    8.3      4.5

10:23   79.64    2.69    8.38    3.13
10:23   20.43    0.12    6.6      3.4

10:24   78.61    5.80    7.88    2.65
10:24   20.17    0.26    6.0      2.3

10:25   78.08    7.04    7.55    3.25
10:25   20.03    0.32    5.6      3.7

10:26   72.96   20.60    8.07    5.20
10:26   18.71    1.28    6.2      8.1

10:27   69.51   28.29    9.17    8.56
10:27   17.82    2.05    7.5     15.7

10:28   68.37   30.17    9.99   18.90
10:28   17.53    2.26    8.4     39.0

10:29   65.74   35.48   11.04   28.38
10:29   16.85    2.90    9.7     60.3

10:30   64.50   37.53   12.01   31.89
10:30   16.53    3.17   10.8     68.2

10:31   60.55   43.82   13.06   35.19
10:31   15.52    4.07   12.0     75.7

10:32   56.12   49.00   13.83   37.14
10:32   14.38    4.89   12.9     80.1

10:33   54.40   51.33   13.88   41.80
10:33   13.93    5.27   12.9     90.6

10:34   52.07   54.86   13.68   47.41
10:34   13.33    5.89   12.7    103.2

10:35   49.30   58.92   13.44   51.09
10:35   12.62    6.65   12.4    111.5

10:36   47.46   61.38   12.98   54.08
10:36   12.15    7.12   11.9    118.3

10:37   52.20   54.16   11.88   58.11
10:37   13.37    5.77   10.6    127.3

10:38   48.40   59.86   12.51   58.44
10:38   12.39    6.83   11.4    128.1

10:39   50.08   57.16   12.44   48.79
10:39   12.82    6.31   11.3    106.3

10:40   49.91   57.20   12.81   57.84
10:40   12.78    6.32   11.7    126.7

10:41   50.76   55.83   12.95   52.97
10:41   13.00    6.07   11.9    115.8

10:42   51.59   54.42   13.91   56.50
10:42   13.21    5.81   13.0    123.7

10:43   45.58   63.13   14.76   50.53
10:43   11.66    7.47   13.9    110.3

10:44   56.53   45.92   12.77   55.54
10:44   14.48    4.39   11.7    121.6
```

```
10:45   67.73   23.53   10.04   59.83
10:45   17.37    1.56    8.5    131.2

10:46   70.55   17.12    8.61   35.17
10:46   18.09    0.99    6.8     75.7

10:47   71.44   15.13    8.10   17.55
10:47   18.32    0.84    6.3     35.9

10:48   71.78   14.40    7.37   12.34
10:48   18.41    0.78    5.4     24.2

10:49   71.96   14.12    6.89   10.88
10:49   18.45    0.76    4.9     20.9

10:50   72.04   13.95    6.36   10.29
10:50   18.48    0.75    4.2     19.6

10:51   72.14   13.92    5.96   10.14
10:51   18.50    0.75    3.8     19.2

10:52   72.21   13.84    5.70   10.07
10:52   18.52    0.74    3.5     19.1

10:53   71.86   14.83    5.52   10.02
10:53   18.43    0.81    3.3     18.9

10:54   68.73   23.16    6.13   10.05
10:54   17.62    1.52    4.0     19.0

10:55   66.79   27.46    6.85   11.87
10:55   17.12    1.96    4.8     23.1

10:56   58.95   42.96    8.83   18.66
10:56   15.11    3.94    7.1     38.4

10:57   56.30   47.19   10.59   25.30
10:57   14.42    4.59    9.1     53.4

10:58   52.96   52.66   11.51   40.90
10:58   13.56    5.50   10.2     88.5

10:59   53.68   51.84   11.48   43.82
10:59   13.75    5.36   10.2     95.1

11:00   55.64   48.79   11.21   46.60
11:00   14.25    4.85    9.8    101.4

11:01   56.85   46.65   11.06   44.99
11:01   14.56    4.51    9.7     97.8

11:02   57.31   45.89   11.04   41.68
11:02   14.68    4.39    9.7     90.3

11:03   57.66   45.55   11.07   39.68
11:03   14.77    4.33    9.7     85.8

11:04   57.91   44.97   11.14   38.20
11:04   14.84    4.24    9.8     82.5

11:05   56.62   47.11   11.62   37.65
11:05   14.50    4.58   10.3     81.2

11:06   54.31   50.91   12.31   38.54
11:06   13.91    5.20   11.1     83.2

11:07   54.81   50.10   12.09   41.29
11:07   14.04    5.07   10.9     89.4

11:08   52.04   54.50   12.02   42.91
11:08   13.32    5.83   10.8     93.1

11:09   50.31   56.94   11.73   45.28
11:09   12.88    6.27   10.5     98.4

11:10   46.71   62.15   11.65   48.45
11:10   11.95    7.28   10.4    105.6

11:11   47.07   61.44   10.96   52.90
11:11   12.05    7.14    9.6    115.6
```

```
11:12  44.44  64.98  10.91  56.27
11:12  11.37   7.85    9.5  123.2

11:13  43.84  65.64  10.59  58.62
11:13  11.21   7.99    9.1  128.5

11:14  41.69  68.20  10.54  61.25
11:14  10.66   8.53    9.1  134.4

11:15  41.02  68.97  10.45  63.94
11:15  10.49   8.70    9.0  140.5

11:16  38.84  71.50  10.70  66.87
11:16   9.93   9.26    9.3  147.1

11:17  37.05  73.55  11.60  70.09
11:17   9.47   9.72   10.3  154.3

11:18  33.86  76.86  12.06  73.23
11:18   8.64  10.50   10.8  161.4

11:19  32.03  78.57  12.22  78.40
11:19   8.17  10.91   11.0  173.1

11:20  29.53  80.62  12.38  84.54
11:20   7.53  11.41   11.2  186.9

11:21  28.53  81.49  12.24  88.27
11:21   7.27  11.63   11.0  195.3

11:22  26.33  83.38  12.27  89.60
11:22   6.71  12.11   11.1  198.3

11:23  27.76  82.24  12.29  89.87
11:23   7.08  11.82   11.1  198.9

11:24  27.89  82.12  12.18  89.37
11:24   7.11  11.79   11.0  197.8

11:25  26.20  83.58  12.42  86.92
11:25   6.67  12.16   11.3  192.3

11:26  24.50  85.04  12.78  86.22
11:26   6.23  12.54   11.7  190.7

11:27  23.93  85.59  13.99  88.36
11:27   6.09  12.68   13.1  195.5

11:28  22.08  87.00  14.24  89.62
11:28   5.61  13.05   13.4  198.4

11:29  20.65  88.10  14.95  90.85
11:29   5.24  13.35   14.2  201.2

11:30  27.46  83.90  15.26  90.65
11:30   7.00  12.24   14.5  200.7

11:31  29.44  82.78  15.37  87.58
11:31   7.51  11.96   14.7  193.8

11:32  30.59  81.88  16.41  80.96
11:32   7.80  11.73   15.9  178.9

11:33  30.23  82.21  17.75  75.67
11:33   7.71  11.81   17.4  166.9

11:34  28.79  83.37  18.64  75.98
11:34   7.34  12.11   18.4  167.6

11:35  24.41  86.62  21.24  77.07
11:35   6.21  12.95   21.4  170.1

11:36  21.45  88.97  24.52  78.72
11:36   5.45  13.58   25.2  173.8

11:37  21.71  88.89  26.19  85.77
11:37   5.52  13.56   27.2  189.7

11:38  21.51  89.08  26.01  89.93
11:38   5.46  13.61   26.9  199.1

11:39  20.64  89.68  25.74  89.55
```

```
11:39   5.24  13.78   26.6  198.2

11:40  20.65  89.67  26.20  88.78
11:40   5.24  13.77   27.2  196.5

11:41  22.04  88.70  24.58  90.04
11:41   5.60  13.51   25.3  199.3

11:42  22.75  88.23  23.24  86.92
11:42   5.78  13.38   23.8  196.8

11:43  22.10  88.63  21.85  88.84
11:43   5.62  13.49   22.1  196.6

11:44  23.69  87.39  20.99  87.93
11:44   6.03  13.16   21.1  194.6

11:45  24.26  87.08  21.08  85.76
11:45   6.17  13.07   21.3  189.7

11:46  26.67  85.10  21.56  83.33
11:46   6.79  12.55   21.8  184.2

11:47  26.04  85.61  22.59  83.27
11:47   6.63  12.69   23.0  184.1

11:48  28.06  84.25  24.29  85.36
11:48   7.15  12.33   25.0  188.8

11:49  17.40  91.32  33.67  82.42
11:49   4.41  14.23   35.8  182.1

11:50  18.49  91.31  60.02  81.23
11:50   4.69  14.22   66.2  179.5

11:51  24.34  87.09  52.46  75.63
11:51   6.20  13.08   57.5  166.8

11:52  34.48  78.55  43.19  80.68
11:52   8.80  10.91   46.8  178.2

11:53  33.17  79.60  37.50  80.17
11:53   8.47  11.16   40.2  177.1

11:54  31.18  81.40  36.31  75.40
11:54   7.95  11.61   38.9  166.3

11:55  31.07  81.51  35.52  77.72
11:55   7.93  11.64   37.9  171.5

11:56  32.56  80.08  34.87  78.03
11:56   8.31  11.28   37.2  172.2

11:57  30.70  81.66  34.83  77.13
11:57   7.83  11.67   37.1  170.2

11:58  29.23  82.86  34.29  77.29
11:58   7.45  11.98   36.5  170.6

11:59  31.33  81.10  32.96  78.46
11:59   7.99  11.53   35.0  173.2

12:00  32.32  80.11  29.63  79.84
12:00   8.25  11.29   31.1  176.3

12:01  32.83  79.73  27.42  78.02
12:01   8.38  11.19   28.6  172.2

12:02  36.34  76.40  25.56  77.01
12:02   9.28  10.39   26.4  169.9

12:03  34.34  78.14  24.60  75.52
12:03   8.77  10.81   25.3  166.6

12:04  32.44  79.84  24.63  73.52
12:04   8.28  11.22   25.4  162.1

12:05  32.99  79.35  26.65  76.44
12:05   8.42  11.10   27.7  168.7

12:06  37.72  74.97  27.58  79.14
```

```
12:07   51.25   58.90   23.42   79.88
12:07   13.12    6.64    24.0   176.4

12:08   52.66   56.59   20.35   70.15
12:08   13.49    6.21    20.4   154.5

12:09   49.76   60.30   19.63   56.34
12:09   12.74    6.91    19.6   123.4

12:10   34.79   77.38   23.55   56.65
12:10    8.89   10.62    24.1   124.1

12:11   38.80   73.25   26.29   61.69
12:11    9.92    9.65    27.3   135.4

12:12   37.58   74.71   29.39   73.41
12:12    9.60    9.99    30.9   161.8

12:13   39.97   72.00   28.62   74.08
12:13   10.22    9.37    30.0   163.4

12:14   38.70   73.36   27.20   73.40
12:14    9.89    9.68    28.3   161.8

12:15   34.92   77.20   26.40   70.23
12:15    8.92   10.58    27.4   154.7

12:16   33.98   78.17   25.76   71.68
12:16    8.68   10.81    26.7   157.9

12:17   32.83   79.25   25.44   75.90
12:17    8.38   11.07    26.3   167.5

12:18   34.59   77.48   24.13   78.06
12:18    8.83   10.65    24.8   172.4

12:19   34.93   77.18   23.60   77.31
12:19    8.92   10.58    24.2   170.6

12:20   33.92   77.93   23.77   76.40
12:20    8.66   10.75    24.4   168.6

12:21   33.62   78.17   25.09   77.13
12:21    8.58   10.81    25.9   170.2

12:22   32.90   78.83   26.63   77.86
12:22    8.40   10.97    27.7   171.9

12:23   33.25   78.52   28.32   77.90
12:23    8.49   10.90    29.6   172.0

12:24   34.03   77.76   29.59   77.35
12:24    8.69   10.71    31.1   170.7

12:25   34.03   77.63   30.47   76.65
12:25    8.69   10.68    32.1   169.6

12:26   33.29   78.41   31.80   75.85
12:26    8.50   10.87    33.6   167.3

12:27   32.95   78.61   32.52   75.95
12:27    8.41   10.92    34.5   167.6

12:28   33.13   78.47   31.77   76.49
12:28    8.46   10.88    33.6   168.8

12:29   31.64   79.90   32.08   77.56
12:29    8.07   11.24    34.0   171.2

12:30   31.09   80.26   31.34   79.19
12:30    7.93   11.32    33.1   174.9

12:31   30.71   80.82   29.82   79.73
12:31    7.83   11.46    31.4   176.1

12:32   33.12   78.48   28.05   81.11
12:32    8.46   10.89    29.3   179.2

12:33   32.91   78.60   26.98   83.41
12:33    8.40   10.92    28.1   184.4
```

```
12:34   32.26   79.30   25.33   85.49
12:34    8.23   11.09    26.2   189.1

12:35   34.42   77.09   24.56   87.56
12:35    8.79   10.55    25.3   193.7

12:36   33.56   77.99   25.46   86.16
12:36    8.57   10.77    26.3   190.6

12:37   33.05   78.29   27.96   84.51
12:37    8.44   10.84    29.2   186.9

12:38   32.91   78.52   33.00   86.51
12:38    8.40   10.90    35.0   191.4

12:39   32.36   79.14   36.80   88.19
12:39    8.26   11.05    39.4   195.2

12:40   35.21   76.28   38.02   89.83
12:40    8.99   10.36    40.8   198.8

12:41   34.56   76.77   38.78   89.54
12:41    8.83   10.48    41.7   198.2

12:42   32.09   79.21   40.89   87.17
12:42    8.19   11.07    44.1   192.8

12:43   31.21   79.70   34.91   88.43
12:43    7.96   11.19    37.2   195.7

12:44   30.50   80.56   38.97   90.97
12:44    7.78   11.40    41.9   201.4

12:45   30.61   80.64   35.76   92.87
12:45    7.81   11.42    38.2   205.7

12:46   29.99   81.11   32.59   94.59
12:46    7.65   11.54    34.6   209.6

12:47   31.31   80.10   31.55   94.60
12:47    7.99   11.28    33.3   209.6

12:48   32.06   79.24   29.18   95.30
12:48    8.18   11.07    30.6   211.2

12:49   33.84   77.48   27.02   93.42
12:49    8.64   10.65    28.1   206.9

12:50   36.76   74.29   25.37   90.07
12:50    9.39    9.89    26.2   199.4

12:51   38.38   72.22   24.40   85.56
12:51    9.81    9.42    25.1   189.2

12:52   37.66   73.12   24.90   79.16
12:52    9.62    9.62    25.7   174.8

12:53   36.48   74.28   27.50   76.05
12:53    9.32    9.89    28.7   167.8

12:54   36.70   74.16   30.90   77.47
12:54    9.38    9.86    32.6   171.0

12:55   33.88   76.96   34.75   79.66
12:55    8.65   10.52    37.0   175.9

12:56   31.94   78.94   38.81   81.97
12:56    8.15   11.00    41.7   181.1

12:57   30.18   80.54   40.62   88.51
12:57    7.70   11.39    43.8   195.9

12:58   28.96   81.71   40.70   92.39
12:58    7.38   11.69    43.9   204.6

12:59   28.52   82.09   39.98   95.42
12:59    7.27   11.78    43.1   211.5

13:00   27.65   82.89   36.46   95.27
13:00    7.05   11.98    39.0   211.1

13:01   29.45   81.37   32.11   97.20
```

START Run 2 C1245

```
13:01     7.51   11.60    34.0   215.5

13:02    30.75   80.12   29.75   96.42
13:02     7.84   11.29    31.3   213.7

13:03    30.06   80.86   28.60   94.33
13:03     7.67   11.47    29.9   209.0

13:04    31.66   79.43   29.22   94.32
13:04     8.08   11.12    30.7   209.0

13:05    33.24   78.05   29.92   95.04
13:05     8.45   10.78    31.5   210.6

13:06    29.96   81.07   33.55   93.85
13:06     7.64   11.53    35.7   207.9

13:07    27.63   83.12   37.98   91.22
13:07     7.04   12.04    40.8   202.0

13:08    27.92   82.97   45.02   96.78
13:08     7.12   12.00    48.9   214.5

13:09    28.71   82.27   51.24   97.88
13:09     7.32   11.83    56.1   217.0

13:10    29.05   82.01   53.06   98.47
13:10     7.41   11.76    58.2   218.3

13:11    29.32   81.65   52.30   96.90
13:11     7.48   11.68    57.3   214.8

13:12    28.89   82.14   49.37   97.03
13:12     7.36   11.79    53.9   215.1

13:13    30.17   80.99   45.96   97.35
13:13     7.70   11.51    50.0   215.8

13:14    29.17   81.92   41.61   95.58
13:14     7.44   11.74    45.0   211.8

13:15    30.30   80.85   37.66   95.78
13:15     7.73   11.47    40.4   212.3

13:16    34.03   77.46   32.60   97.13
13:16     8.69   10.64    34.6   215.3

13:17    33.48   77.90   29.76   93.62
13:17     8.55   10.75    31.3   207.4

13:18    34.18   77.25   27.69   89.28
13:18     8.73   10.59    28.9   197.6

13:19    34.60   76.71   26.04   92.88
13:19     8.84   10.46    27.0   205.7

13:20    34.01   77.36   27.87   89.70
13:20     8.68   10.62    29.1   198.6

13:21    33.45   77.84   31.88   88.71
13:21     8.54   10.73    33.7   196.3

13:22    34.73   76.73   34.77   89.78
13:22     8.87   10.47    37.1   198.7

13:23    33.38   77.90   38.85   87.95
13:23     8.52   10.75    41.8   194.6

13:24    30.89   80.35   42.71   87.63
13:24     7.88   11.35    46.3   193.9

13:25    29.82   81.44   45.94   87.59
13:25     7.60   11.62    50.0   193.8

13:26    28.36   82.64   50.45   90.63
13:26     7.23   11.92    55.2   200.7

13:27    29.60   81.66   51.20   92.39
13:27     7.55   11.67    56.1   204.6

13:28    28.33   82.69   48.43   92.96
```

```
13:28     7.22   11.93    52.9   205.9

13:29    28.06   82.96   46.44   92.91
13:29     7.15   12.00    50.6   205.8

13:30    27.84   83.07   39.60   95.46
13:30     7.10   12.03    42.7   211.5

13:31    28.41   82.57   35.32   96.36
13:31     7.24   11.90    37.7   213.6

13:32    28.24   82.85   34.72   96.35
13:32     7.20   11.98    37.0   213.5

13:33    32.16   79.33   34.45   99.27
13:33     8.21   11.09    36.7   220.1

13:34    32.33   79.18   32.30   96.94
13:34     8.25   11.06    34.2   214.9

13:35    30.61   80.76   31.15   94.39
13:35     7.81   11.45    32.9   209.1

13:36    29.26   81.98   32.40   95.50
13:36     7.46   11.75    34.3   211.6

13:37    32.05   79.42   36.05   98.64
13:37     8.18   11.12    38.5   218.7

13:38    33.63   77.84   36.30   98.45
13:38     8.59   10.73    38.8   218.3

13:39    33.62   77.85   36.78   96.29
13:39     8.58   10.74    39.4   213.4

13:40    34.55   76.98   34.59   94.93
13:40     8.82   10.53    36.9   210.3

13:41    36.15   75.36   30.01   93.99
13:41     9.23   10.14    31.6   208.2

13:42    35.29   76.23   26.36   90.98
13:42     9.01   10.35    27.4   201.4

13:43    33.65   77.81   24.60   89.38
13:43     8.59   10.72    25.3   197.8

13:44    31.63   79.67   24.26   90.62
13:44     8.07   11.18    24.9   200.6

13:45    31.62   79.74   24.16   93.42
13:45     8.07   11.20    24.8   206.9

13:46    32.66   78.27   20.10   95.40
13:46     8.34   10.84    20.1   211.4

13:47    31.22   80.02   22.42   93.71
13:47     7.97   11.27    22.8   207.6

13:48    30.26   80.95   22.27   93.16
13:48     7.72   11.50    22.6   206.3

13:49    30.80   80.47   21.01   94.80
13:49     7.86   11.38    21.2   210.1

13:50    32.53   78.78   19.60   95.17
13:50     8.30   10.96    19.5   210.9

13:51    34.04   77.37   18.90   93.54
13:51     8.69   10.62    18.7   207.2

13:52    32.76   78.56   18.69   90.54
13:52     8.36   10.91    18.5   200.5

13:53    34.26   77.17   18.43   89.76
13:53     8.75   10.57    18.2   198.7

13:54    33.07   78.31   18.39   90.05
13:54     8.44   10.85    18.1   199.4

13:55    31.97   79.38   18.45   88.08
13:55     8.16   11.11    18.2   194.9
```

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13:56   30.81   80.32   18.63   86.86
13:56    7.86   11.34    18.4   196.7

13:57   30.01   81.08   19.11   91.38
13:57    7.65   11.53    19.0   202.3

13:58   28.86   82.11   19.89   92.95
13:58    7.36   11.79    19.9   205.9

13:59   27.11   83.75   21.29   94.25
13:59    6.91   12.20    21.5   208.8

14:00   25.62   85.06   22.05   98.25
14:00    6.52   12.54    22.4   217.8

14:01   26.66   84.24   21.78  103.00
14:01    6.79   12.33    22.1   228.5

14:02   32.55   78.87   20.55  103.49
14:02    8.31   10.98    20.6   229.6

14:03   33.55   77.75   19.31  100.48
14:03    8.56   10.71    19.2   222.9

14:04   34.13   77.17   18.59   94.44
14:04    8.72   10.57    18.4   209.2

14:05   33.92   77.30   18.43   92.29
14:05    8.66   10.60    18.2   204.4

14:06   29.26   81.76   18.98   91.44
14:06    7.46   11.70    18.8   202.5

14:07   31.52   79.72   18.63   94.15
14:07    8.04   11.19    18.4   208.6

14:08   31.75   79.63   18.66   99.94
14:08    8.10   11.17    18.5   221.6

14:09   32.20   79.03   18.78   98.24
14:09    8.22   11.03    18.6   217.8

14:10   31.88   79.33   18.55   99.85
14:10    8.14   11.09    18.3   221.4

14:11   31.94   79.32   18.32   99.89
14:11    8.15   11.09    18.1   221.5

14:12   32.91   78.38   18.40   99.25
14:12    8.40   10.86    18.2   220.1

14:13   34.53   76.78   18.36   98.22
14:13    8.82   10.48    18.1   217.8

14:14   35.92   75.43   17.58   95.63
14:14    9.18   10.16    17.2   211.9

14:15   35.28   76.07   17.27   91.97
14:15    9.01   10.31    16.9   203.7  < Port change

14:16   33.98   77.38   17.05   87.41
14:16    8.68   10.62    16.6   193.4

14:17   38.77   72.38   16.61   88.89
14:17    9.91    9.46    16.1   196.7

14:18   48.02   60.82   12.28   89.25
14:18   12.29    7.01    11.1   197.5

14:19   50.54   57.18   14.40   79.99
14:19   12.94    6.32    13.5   176.7

14:20   48.37   59.76   14.34   64.46
14:20   12.38    6.81    13.5   141.7

14:21   31.08   79.50   16.24   63.70
14:21    7.93   11.14    15.7   139.9

14:22   26.42   84.03   17.11   69.93
14:22    6.73   12.28    16.7   154.0
```

```
14:23    7.53   11.59    18.1   224.8

14:24   29.62   81.35   19.78  102.45
14:24    7.55   11.60    19.8   227.3

14:25   28.53   82.28   20.69   99.77
14:25    7.27   11.83    20.8   221.3

14:26   28.78   82.12   20.73  102.01
14:26    7.34   11.79    20.8   226.3

14:27   29.91   80.74   16.90   99.93
14:27    7.63   11.44    16.4   221.6

14:28   30.30   80.74   17.83  100.32
14:28    7.73   11.44    17.5   222.9

14:29   33.10   78.21   19.55  100.67
14:29    8.45   10.82    19.5   223.3

14:30   34.17   77.04   18.74   98.41
14:30    8.73   10.54    18.6   218.2  ← RESTART

14:31   35.33   75.83   18.06   94.58
14:31    9.02   10.25    17.8   209.6

14:32   35.33   75.86   17.62   90.15
14:32    9.02   10.26    17.3   199.6

14:33   33.91   77.26   18.01   91.76
14:33    8.66   10.59    17.7   203.2

14:34   31.20   79.84   19.37   92.21
14:34    7.96   11.22    19.3   204.2

14:35   32.63   78.49   20.52   94.54
14:35    8.33   10.89    20.6   209.5

14:36   31.55   79.54   21.05   97.38
14:36    8.05   11.15    21.2   215.9

14:37   31.05   79.95   19.20   97.18
14:37    7.92   11.25    19.1   215.4

14:38   31.22   79.94   20.49   97.55
14:38    7.97   11.25    20.6   216.3

14:39   29.90   81.17   20.48   96.83
14:39    7.63   11.55    20.6   214.6

14:40   28.83   82.05   20.64   98.05
14:40    7.35   11.77    20.7   217.4

14:41   29.61   81.60   20.93   98.33
14:41    7.55   11.66    21.1   218.0

14:42   28.98   81.99   21.43  101.54
14:42    7.39   11.76    21.7   225.2

14:43   27.41   83.52   21.23  100.89
14:43    6.98   12.15    21.4   223.8

14:44   26.28   84.43   20.60  101.70
14:44    6.69   12.38    20.7   225.6

14:45   24.45   85.94   19.06  102.82
14:45    6.22   12.77    18.9   228.1

14:46   26.43   83.95   19.98  103.94
14:46    6.73   12.26    20.0   230.6

14:47   27.23   82.54   17.63  100.23
14:47    6.94   11.90    17.3   222.3

14:48   31.29   78.35   15.39   99.36
14:48    7.98   10.86    14.7   220.3

14:49   31.97   77.80   16.87   96.08
14:49    8.16   10.72    16.4   212.9

14:50   33.66   75.67   12.73   92.31
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```
14:50    8.59   10.22    11.6   204.4

14:51   38.44   71.00   15.33   92.38
14:51    9.82    9.15    14.6   204.6

14:52   35.07   74.56   15.19   87.97
14:52    8.96    9.96    14.4   194.6

14:53   35.31   73.31   12.09   85.45
14:53    9.02    9.67    12.0   189.0

14:54   34.06   75.56   13.58   86.79
14:54    8.70   10.19    12.6   192.0

14:55   37.19   73.57   15.15   87.75
14:55    9.50    9.73    14.4   194.2

14:56   37.52   73.50   15.43   85.75
14:56    9.59    9.71    14.7   189.7

14:57   34.51   76.47   16.42   82.27
14:57    8.81   10.41    15.9   181.8

14:58   32.76   76.96   10.52   82.65
14:58    8.36   10.52     9.1   182.7

14:59   33.84   77.15   17.57   84.60
14:59    8.64   10.57    17.2   187.1

15:00   31.57   79.35   20.60   85.15
15:00    8.06   11.10    20.7   188.3

15:01   28.22   82.49   21.78   90.24
15:01    7.19   11.88    22.1   199.8

15:02   25.50   84.84   22.47   97.83
15:02    6.49   12.49    22.9   216.9

15:03   26.08   84.49   23.82  102.92
15:03    6.64   12.39    24.4   228.4

15:04   28.27   82.60   19.61  104.60
15:04    7.21   11.91    19.6   232.2

15:05   30.39   80.68   21.11  101.67
15:05    7.75   11.43    21.3   225.5

15:06   33.15   78.08   20.12   98.32
15:06    8.46   10.79    20.1   218.0

15:07   34.77   76.52   18.67   96.23
15:07    8.88   10.42    18.5   213.3

15:08   33.81   77.46   17.53   92.75
15:08    8.63   10.64    17.2   205.4

15:09   32.80   78.45   17.31   91.45
15:09    8.37   10.88    16.9   202.5

15:10   33.62   77.64   16.94   94.89
15:10    8.58   10.69    16.5   210.3

15:11   33.74   77.46   16.70   96.49
15:11    8.61   10.64    16.2   213.9

15:12   31.25   79.97   17.28   94.85
15:12    7.97   11.25    16.9   210.2

15:13   31.80   79.49   17.34   95.86
15:13    8.12   11.13    16.9   212.4

15:14   30.82   80.40   17.13   97.80
15:14    7.86   11.36    16.7   216.8

15:15   30.44   80.45   15.04   96.85
15:15    7.76   11.37    14.3   214.7

15:16   31.70   79.79   18.25   96.59
15:16    8.09   11.21    18.0   214.1

15:17   32.85   78.61   17.49   97.37
15:17    8.39   10.92    17.1   215.8

15:18   31.79   79.64   17.96   95.33
15:18    8.11   11.17    17.6   211.2

15:19   30.81   80.51   18.45   94.75
15:19    7.86   11.39    18.2   209.9

15:20   31.26   80.38   18.62   96.73
15:20    7.97   11.36    18.4   214.4

15:21   30.90   80.47   19.50   97.50
15:21    7.88   11.38    19.4   216.1

15:22   29.19   82.27   20.67   97.91
15:22    7.44   11.83    20.8   217.1

15:23   30.22   81.27   20.97  100.00
15:23    7.71   11.58    21.1   221.8

15:24   30.85   80.83   21.50  100.58
15:24    7.87   11.47    21.7   223.1

15:25   31.47   80.26   21.08   99.55
15:25    8.03   11.32    21.3   220.8

15:26   32.48   79.27   20.06   98.57
15:26    8.29   11.08    20.1   218.6

15:27   31.92   79.63   19.37   97.34
15:27    8.14   11.17    19.3   215.8

15:28   30.60   60.91   19.28   94.71
15:28    7.81   11.49    19.2   209.8

15:29   29.58   81.97   19.26   93.89
15:29    7.54   11.75    19.2   208.0

15:30   27.68   83.63   20.07   95.40
15:30    7.05   12.17    20.1   211.4

15:31   27.08   84.22   21.49   99.34
15:31    6.90   12.33    21.7   220.3

15:32   29.18   82.46   21.94  101.43
15:32    7.44   11.87    22.2   225.0

15:33   29.10   82.53   22.61  101.66
15:33    7.42   11.89    23.0   225.5

15:34   31.36   80.64   23.14  100.46
15:34    8.00   11.42    23.6   222.8

15:35   32.77   79.36   22.60  100.59
15:35    8.36   11.10    23.0   223.1

15:36   35.27   77.18   21.50   97.44
15:36    9.01   10.57    21.7   216.0

15:37   36.03   76.13   19.38   95.93
15:37    9.20   10.32    19.3   212.6

15:38   37.20   74.98   17.82   89.43
15:38    9.51   10.05    17.5   198.0

15:39   36.14   75.95   16.95   86.09
15:39    9.23   10.28    16.5   190.4

15:40   33.24   78.74   16.64   84.72
15:40    8.49   10.95    16.1   187.3

15:41   33.15   79.05   16.42   90.62
15:41    8.46   11.03    15.9   200.6

15:42   33.19   78.82   16.54   93.54
15:42    8.47   10.97    16.0   207.2

15:43   30.39   81.33   17.29   91.34
15:43    7.75   11.59    16.9   202.3

15:44   30.30   81.44   18.36   95.10
15:44    7.73   11.62    18.1   210.7
```

15:45	28.42	83.12	20.74	98.85
15:45	7.24	12.04	20.9	219.2
15:46	29.79	82.03	22.73	102.96
15:46	7.60	11.77	23.2	228.4
15:47	30.33	81.71	22.71	105.23
15:47	7.74	11.69	23.1	233.6
15:48	28.98	82.72	22.51	102.79
15:48	7.39	11.94	22.9	228.1
15:49	28.72	82.89	22.32	101.03
15:49	7.32	11.98	22.7	224.1
15:50	27.24	83.93	22.24	101.37
15:50	6.94	12.25	22.6	224.9
15:51	26.15	84.97	23.83	102.64
15:51	6.66	12.52	24.4	227.7
15:52	27.72	83.62	24.96	105.08
15:52	7.07	12.17	25.7	233.2
15:53	28.19	83.28	24.27	105.72
15:53	7.18	12.08	24.9	234.7
15:54	29.47	82.11	23.94	104.60
15:54	7.51	11.79	24.6	232.1
15:55	29.09	82.54	23.82	103.16
15:55	7.42	11.90	24.4	228.9
15:56	31.05	80.67	22.73	103.83
15:56	7.92	11.43	23.2	230.4
15:57	34.91	77.06	21.46	103.56
15:57	8.92	10.55	21.7	229.8
15:58	36.59	75.51	19.67	101.17
15:58	9.35	10.18	19.6	224.4
15:59	38.72	73.19	17.59	95.88
15:59	9.90	9.64	17.2	212.5
16:00	37.37	74.57	16.40	89.09
16:00	9.55	9.96	15.8	197.2
16:01	35.72	76.29	15.64	87.20
16:01	9.12	10.36	15.0	192.9
16:02	34.65	77.20	15.43	88.56
16:02	8.85	10.58	14.7	196.0
16:03	33.38	78.49	15.64	89.50
16:03	8.52	10.89	15.0	198.1
16:04	31.93	79.77	15.91	93.73
16:04	8.15	11.20	15.3	207.6
16:05	29.83	81.79	16.42	94.63
16:05	7.61	11.71	15.9	209.7
16:06	29.57	82.12	17.17	97.54
16:06	7.54	11.79	16.7	216.2
16:07	27.02	84.26	18.18	99.83
16:07	6.88	12.34	17.9	221.4
16:08	28.99	82.62	18.75	102.12
16:08	7.39	11.92	18.6	226.6
16:09	32.11	79.62	18.73	102.79
16:09	8.20	11.17	18.5	228.1
16:10	31.74	79.75	18.75	100.02
16:10	8.10	11.20	18.6	221.8
16:11	30.48	81.11	18.72	96.46
16:11	7.77	11.54	18.5	213.8
16:12	31.09	80.52	18.80	96.93
16:12	7.93	11.39	18.6	214.8
16:13	31.80	79.95	18.80	98.09
16:13	8.12	11.25	18.6	217.5
16:14	32.76	79.23	18.54	97.94
16:14	8.36	11.07	18.3	217.1
16:15	34.97	76.92	18.03	98.01
16:15	8.93	10.51	17.7	217.3
16:16	36.15	75.67	17.26	96.51
16:16	9.24	10.22	16.8	213.9
16:17	34.65	77.23	16.74	93.68
16:17	8.85	10.59	16.2	207.5
16:18	33.52	78.28	16.49	92.72
16:18	8.56	10.84	15.9	205.4
16:19	33.37	78.47	16.16	94.69
16:19	8.52	10.89	15.6	209.8
16:20	30.08	81.38	16.26	96.00
16:20	7.67	11.60	15.7	212.8
16:21	29.77	81.75	16.18	98.46
16:21	7.59	11.70	15.6	218.3
16:22	30.05	81.54	15.96	102.60
16:22	7.66	11.64	15.3	227.6
16:23	27.97	83.39	16.04	102.60
16:23	7.13	12.11	15.4	227.6
16:24	27.37	83.84	16.47	102.19
16:24	6.97	12.23	15.9	226.7
16:25	28.82	82.59	17.13	104.19
16:25	7.35	11.91	16.7	231.2
16:26	30.63	81.03	17.37	103.76
16:26	7.81	11.52	17.0	230.3
16:27	35.80	76.11	16.52	101.43
16:27	9.14	10.32	16.0	225.0
16:28	35.06	76.75	15.94	97.09
16:28	8.95	10.47	15.3	215.2
16:29	35.83	76.07	15.36	91.92
16:29	9.15	10.31	14.6	203.6
16:30	35.52	76.51	15.08	91.96
16:30	9.07	10.41	14.3	203.7
16:31	33.24	78.74	15.12	91.63
16:31	8.49	10.95	14.4	202.9
16:32	31.82	80.08	15.23	92.41
16:32	8.12	11.28	14.5	204.7
16:33	30.99	80.87	15.70	94.84
16:33	7.90	11.48	15.0	210.1
16:34	30.44	81.41	16.00	97.71
16:34	7.76	11.61	15.4	216.6
16:35	31.87	80.06	16.24	99.11
16:35	8.13	11.28	15.7	219.8
16:36	31.41	80.42	16.50	99.23
16:36	8.01	11.36	16.0	220.0
16:37	33.41	78.40	16.24	98.92
16:37	8.53	10.87	15.7	219.3
16:38	32.21	79.28	15.97	98.56
16:38	8.22	11.08	15.4	218.5
16:39	29.55	81.70	16.16	96.35
16:39	7.54	11.68	15.6	213.5

```
16:40  27.96  83.07  16.56   98.59
16:40   7.13  12.03   16.0   218.6
16:41  26.34  84.64  17.32  102.49
16:41   6.71  12.43   16.9   227.4
16:42  27.27  83.74  17.81  101.74
16:42   6.95  12.20   17.5   225.7
16:43  27.11  84.06  18.09  102.53
16:43   6.91  12.28   17.8   227.5
16:44  28.73  82.62  18.03  103.18
16:44   7.32  11.92   17.7   228.9
16:45  31.39  80.26  17.41  102.09
16:45   8.01  11.32   17.0   226.5
16:46  31.04  80.50  17.22   99.23
16:46   7.92  11.38   16.8   220.0
16:47  31.84  79.77  16.88   97.82
16:47   8.12  11.20   16.4   216.9
16:48  36.43  75.39  16.09   99.90
16:48   9.31  10.15   15.5   221.5
16:49  42.92  68.37  14.47   97.85
16:49  10.98   8.57   13.6   216.9
16:50  38.53  73.07  14.16   89.58
16:50   9.85   9.61   13.3   198.3
16:51  35.42  76.39  14.06   79.45
16:51   9.05  10.39   13.1   175.4
16:52  35.23  76.51  13.83   90.60
16:52   9.00  10.41   12.9   200.6
16:53  32.90  78.66  13.89   95.20
16:53   8.40  10.93   12.9   210.9
16:54  30.40  81.00  14.13   91.83
16:54   7.75  11.51   13.2   203.2
16:55  29.20  82.11  14.31   98.92
16:55   7.45  11.79   13.4   219.3
16:56  28.29  82.82  14.42  103.54
16:56   7.21  11.97   13.6   229.7
16:57  25.73  85.03  14.80  106.07
16:57   6.55  12.53   14.0   235.4
16:58  26.42  84.49  15.05  107.92
16:58   6.73  12.40   14.3   239.6
16:59  27.85  83.41  15.27  110.82
16:59   7.10  12.12   14.5   246.2
17:00  30.04  81.52  15.28  106.88
17:00   7.66  11.64   14.6   237.3
17:01  28.82  82.43  15.49  107.06
17:01   7.35  11.87   14.8   237.7
17:02  28.69  82.68  15.74  104.12
17:02   7.31  11.93   15.1   231.1
17:03  32.27  79.43  15.66  105.41
17:03   8.24  11.12   15.0   234.0
17:04  34.25  77.57  15.37  101.84
17:04   8.74  10.67   14.7   225.9
17:05  35.04  76.77  15.00   95.76
17:05   8.95  10.48   14.2   212.2
17:06  32.79  78.84  14.85   92.21
17:06   8.37  10.98   14.1   204.2
```

```
17:07  30.77  80.71  15.13   93.17
17:07   7.85  11.44   14.4   206.4
17:08  29.64  81.74  15.10   97.50
17:08   7.56  11.69   14.3   216.1
17:09  30.21  81.39  15.04  100.55
17:09   7.70  11.61   14.3   223.0
17:10  31.42  80.26  15.02  102.14
17:10   8.02  11.33   14.2   226.6
17:11  32.28  79.57  14.63  101.67
17:11   8.24  11.15   13.8   225.5
17:12  34.78  77.11  14.04   98.99
17:12   8.88  10.56   13.1   219.5
17:13  33.58  78.22  13.63   95.20
17:13   8.57  10.82   12.6   211.0
17:14  34.81  77.15  13.16   91.65
17:14   8.89  10.57   12.1   202.9
17:15  34.79  77.04  12.79   90.65
17:15   8.88  10.54   11.7   200.7
17:16  32.91  79.16  12.64   86.24
17:16   8.40  11.05   11.5   190.8
17:17  37.63  74.63  11.87   89.05
17:17   9.61   9.97   10.6   197.1
17:18  41.93  69.83  11.06   86.96
17:18  10.72   8.89    9.7   192.4
17:19  38.69  73.21  11.17   76.27
17:19   9.89   9.65    9.8   168.3
17:20  39.33  72.69  11.19   73.89
17:20  10.05   9.53    9.8   162.9
17:21  39.86  71.97  11.77   72.37
17:21  10.19   9.36   10.5   159.5
17:22  37.63  74.36  14.02   69.63
17:22   9.62   9.91   13.1   153.3
17:23  38.80  73.10  16.12   70.83
17:23   9.92   9.62   15.5   156.0
17:24  38.52  73.56  17.07   73.63
17:24   9.84   9.73   16.6   162.3
17:25  35.41  76.11  17.47   78.00
17:25   9.04  10.32   17.1   172.2
17:26  28.21  83.11  18.75   80.25
17:26   7.19  12.04   18.6   177.3
17:27  26.53  84.41  19.17   93.44
17:27   6.76  12.37   19.1   207.0
17:28  26.55  84.42  18.74  105.71
17:28   6.76  12.38   18.6   234.6
17:29  34.07  77.84  17.15  109.59
17:29   8.70  10.73   16.7   243.4
17:30  37.10  74.72  15.72  105.48
17:30   9.48   9.99   15.1   234.1
17:31  35.02  76.71  15.05   97.90
17:31   8.94  10.46   14.3   217.0
17:32  39.56  71.99  14.23   94.23
17:32  10.11   9.37   13.3   208.8
17:33  29.08  81.94  19.63   91.83
17:33   7.41  11.74   19.6   203.4
17:34  30.00  81.56  23.67   94.12
```

```
17:34     7.65   11.65    24.3   208.5

17:35    28.41   82.80   19.77   99.17
17:35     7.24   11.96    19.7   219.9

17:36    27.08   83.82   17.79  101.84
17:36     6.90   12.22    17.4   225.9

17:37    26.30   84.62   16.77  105.86
17:37     6.70   12.43    16.3   235.0

17:38    27.02   84.16   15.92  109.46
17:38     6.88   12.31    15.3   243.1

17:39    28.56   82.92   15.24  111.15
17:39     7.28   11.99    14.5   246.9

17:40    30.75   81.36   14.77  110.09
17:40     7.85   11.60    14.0   244.5

17:41    34.34   77.94   14.04  108.14
17:41     8.77   10.76    13.1   240.1

17:42    36.81   75.58   13.34  104.33
17:42     9.41   10.20    12.3   231.5

17:43    34.75   77.72   13.10   98.06
17:43     8.87   10.71    12.0   217.4

17:44    37.98   74.55   12.84   93.80
17:44     9.71    9.95    11.7   207.8

17:45    40.85   71.37   12.49   91.44
17:45    10.45    9.23    11.3   202.5

17:46    39.53   72.65   12.48   85.96
17:46    10.11    9.52    11.3   190.1

17:47    36.54   75.63   12.70   82.06
17:47     9.33   10.21    11.6   181.3

17:48    34.35   78.01   13.36   82.54
17:48     8.77   10.77    12.3   182.4

17:49    31.87   80.26   14.32   86.53
17:49     8.13   11.32    13.4   191.4

17:50    27.92   83.71   15.51   92.55
17:50     7.12   12.20    14.8   205.0

17:51    26.99   84.63   16.75   98.27
17:51     6.88   12.43    16.2   217.9

17:52    25.61   85.72   18.00  102.70
17:52     6.52   12.72    17.7   227.9

17:53    27.31   84.44   18.87  104.03
17:53     6.96   12.38    18.7   230.9

17:54    29.61   82.50   18.94  103.91
17:54     7.55   11.89    18.8   230.6

17:55    29.94   82.19   18.61  102.22
17:55     7.64   11.81    18.4   226.8

17:56    32.52   79.92   17.84  100.08
17:56     8.30   11.24    17.5   221.9

17:57    36.76   75.90   16.52   98.15
17:57     9.39   10.27    16.0   217.6

17:58    41.08   71.20   14.99   94.27
17:58    10.50    9.19    14.2   208.9

17:59    42.18   69.96   13.87   87.72
17:59    10.79    8.92    12.9   194.1

18:00    43.67   68.27   12.91   79.22
18:00    11.17    8.55    11.8   174.9

18:01    43.45   68.47   10.28   76.24
```

```
18:02    43.44   68.10   10.89   74.15
18:02    11.11    8.51     9.5   163.5
18:04             1.28    3.75    4.58   68.05
18:05             0.47    1.99    3.89   59.60
18:06             0.33    1.73    3.41    5.23
18:07             0.29    1.68    3.17    1.81
18:08             0.27    1.66    3.02    1.56
18:09             0.26    1.67    2.90    1.50
18:10             0.25    1.58    2.80    1.45
18:11             0.23    1.57    2.77    1.41
18:12             0.23    1.62    2.73    1.36
18:13             0.22    1.54    2.71    1.39
18:14             0.21    1.52    2.65    1.36
18:15             0.20    1.53    2.60    1.36
18:16             0.21    1.54    2.59    1.34
18:17             0.22    1.56    2.57    1.27
18:17FINAL ZERO
 0   O2   0.22
 1   CO2  1.56
 2   SO2  2.57
 3   NOx  1.27
18:20             0.23    1.56   20.89    1.30
18:21             0.20    1.52   19.80    1.34
18:22             0.24    1.60   18.49    1.25
18:23             0.18    1.50   33.86    1.24
18:24             0.19    1.52   47.26    1.31
18:25             0.19    1.51   53.38    1.29
18:26             0.19    1.49   57.32    1.29
18:27             0.19    1.47   60.28    1.26
18:28             0.19    1.50   62.53    1.22
18:29             0.19    1.48   64.51    1.23
18:30             0.18    1.44   66.12    1.22
18:31             0.18    1.51   67.51    1.23
18:32             0.17    1.41   68.62    1.23
18:33             0.18    1.53   69.73    1.22
18:34             0.18    1.42   70.57    1.23
18:35             0.19    1.42   71.47    1.24
18:36             0.19    1.44   72.23    1.21
18:37             0.15    1.40   72.87    1.22
18:38             0.18    1.38   73.52    1.24
18:39             0.17    1.40   74.19    1.23
18:40             0.18    1.39   74.68    1.27
18:41             0.18    1.40   64.31    1.24
18:42             0.17    1.35   75.55    1.22
18:43             0.16    1.42   75.98    1.24
18:44             0.18    1.41   76.22    1.26
18:45             0.17    1.42   76.47    1.27
18:46             0.17    1.37   76.83    1.25
18:47             0.17    1.41   77.17    1.27
18:48             0.16    1.34   77.54    1.26
18:49             0.18    1.32   77.93    1.24
18:50             0.18    1.34   78.23    1.24
18:51             0.16    1.33   78.51    1.23
18:52             0.16    1.34   78.83    1.25
18:53             0.15    1.32   79.00    1.25
18:54             0.18    1.34   79.18    1.24
18:55             0.18    1.32   79.46    1.25
18:56             0.15    1.33   79.61    1.23
18:57             0.16    1.30   79.87    1.25
18:58             0.16    1.27   80.09    1.23
18:59             0.17    1.32   80.57    1.28
19:00             0.18    1.31   81.01    1.25
19:01             0.16    1.23   81.25    1.25
19:02             0.16    1.31   81.43    1.25
19:03             0.15    1.34   81.55    1.26
```

```
19:04          0.16    1.25  81.68    1.27
19:05          0.15    1.32  82.06    1.26
19:06          0.16    1.22  82.41    1.26
19:07          0.13    1.28  82.58    1.25
19:08          0.14    1.27  82.60    1.28
19:09          0.13    1.28  82.58    1.25
19:10          0.15    1.28  82.62    1.24
19:10FINAL SPAN
 2  SO2  82.62     93.10
19:19          0.81    1.30  48.41    5.03
19:20          0.24    1.35  26.74   31.51
19:21          0.19    1.26  19.92   45.93
19:22          0.17    1.26  16.54   46.71
19:23          0.17    1.25  14.52   46.87
19:24          0.17    1.24  13.14   49.78
19:25          0.16    1.30  12.12   49.81
19:26          0.14    1.24  11.39   49.54
19:27          0.16    1.24  10.83   49.57
19:27FINAL SPAN
 3  NOx  49.57    107.80
19:34         16.48   82.63  11.38    0.08
19:35         15.87   82.83   8.49    0.08
19:36         15.33   82.93   6.33    0.06
19:37         15.19   82.98   5.33    0.05
19:38         15.19   82.94   4.77    0.09
19:38FINAL SPAN
 1  CO2  82.94     12.00
19:45         51.57    9.21   5.85    0.06
19:46         52.17    2.14   4.54    0.07
19:47         52.04    1.39   3.88    0.06
19:48         52.02    1.38   3.59    0.05
19:48FINAL SPAN
 0  O2  52.02      14.01
MR2OUT
RUN#2 MERC
12-10-1987
OUTLET MERC
8910-L02-12
GWS


              O2     CO2     SO2     NOx

   958.0    49.00   58.11  111.30    1.52
   959.0    55.10   50.10   46.70   22.80
  1000.0    62.31   36.01   28.41   43.76
  1001.0    62.86   34.77   21.96   41.09
  1002.0    66.71   25.91   18.27   32.40
  1003.0    68.52   21.76   15.55   26.49
  1004.0    68.44   21.74   13.48   19.59
  1005.0    68.34   22.09   11.81   15.59
  1006.0    60.50   38.93   11.84   15.03
  1007.0    61,86   38.01   11.39   18.73
  1008.0    62.06   39.27   11.21   29.93
  1009.0    56.74   48.82   12.24   30.95
  1010.0    56.86   48.34   12.65   31.97
  1011.0    58.29   45.94   12.65   39.43
  1012.0    57.56   47.23   12.68   38.13
  1013.0    58.23   45.96   12.40   36.31
  1014.0    60.89   40.83   11.96   35.77
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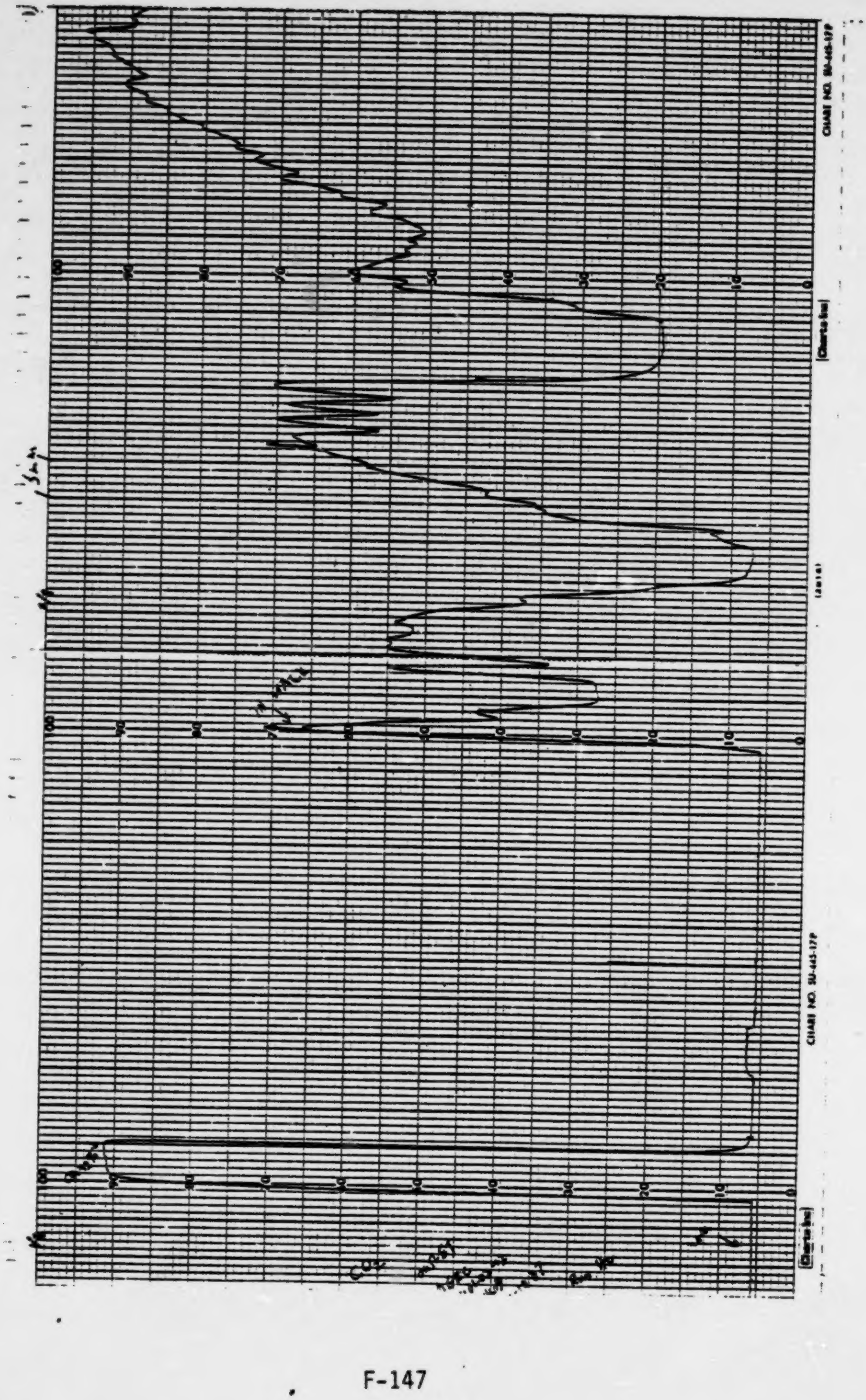
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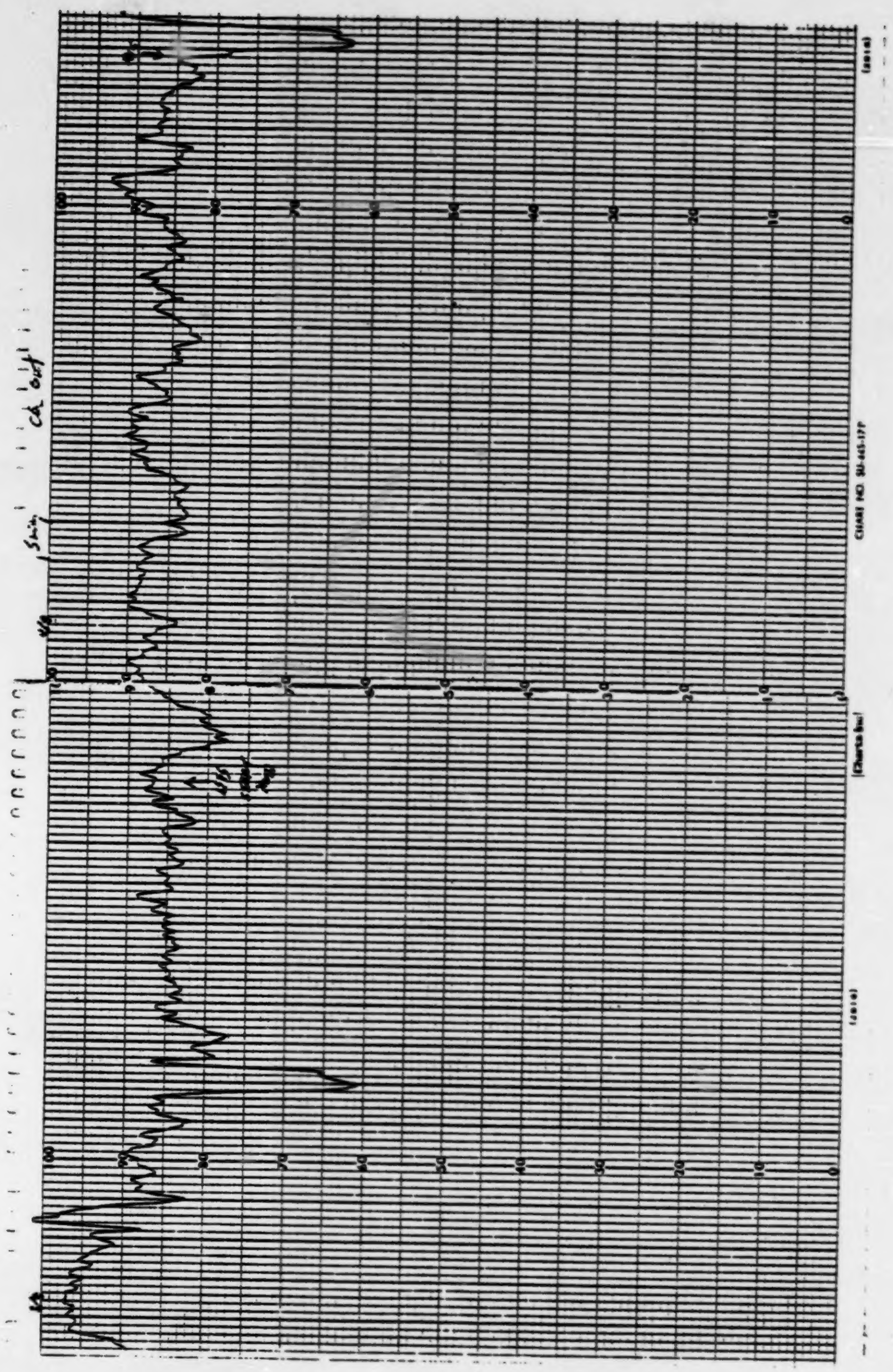
CO2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20
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0
4/8
5 min
Ck Out
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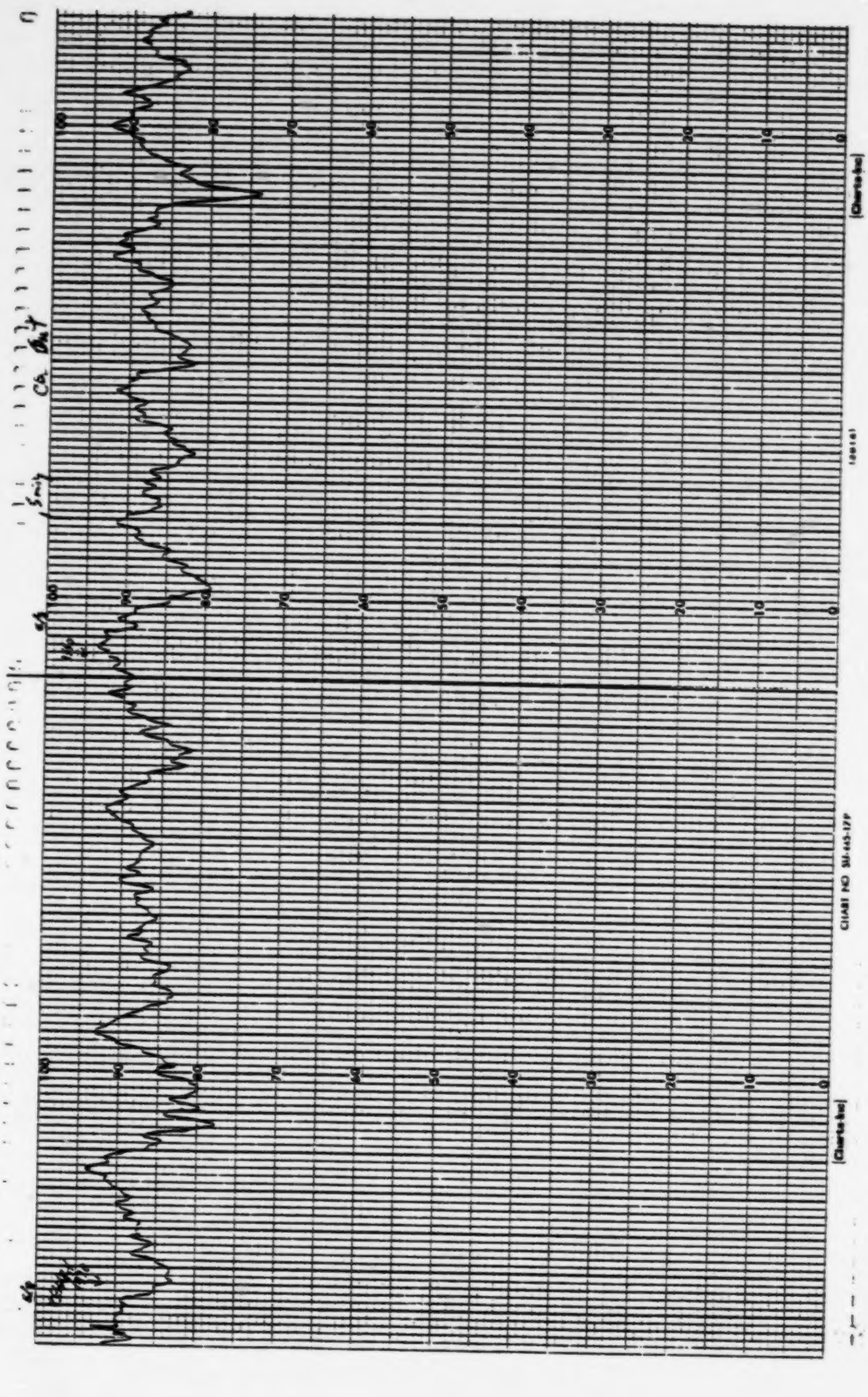
(Charts Inc)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30
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10
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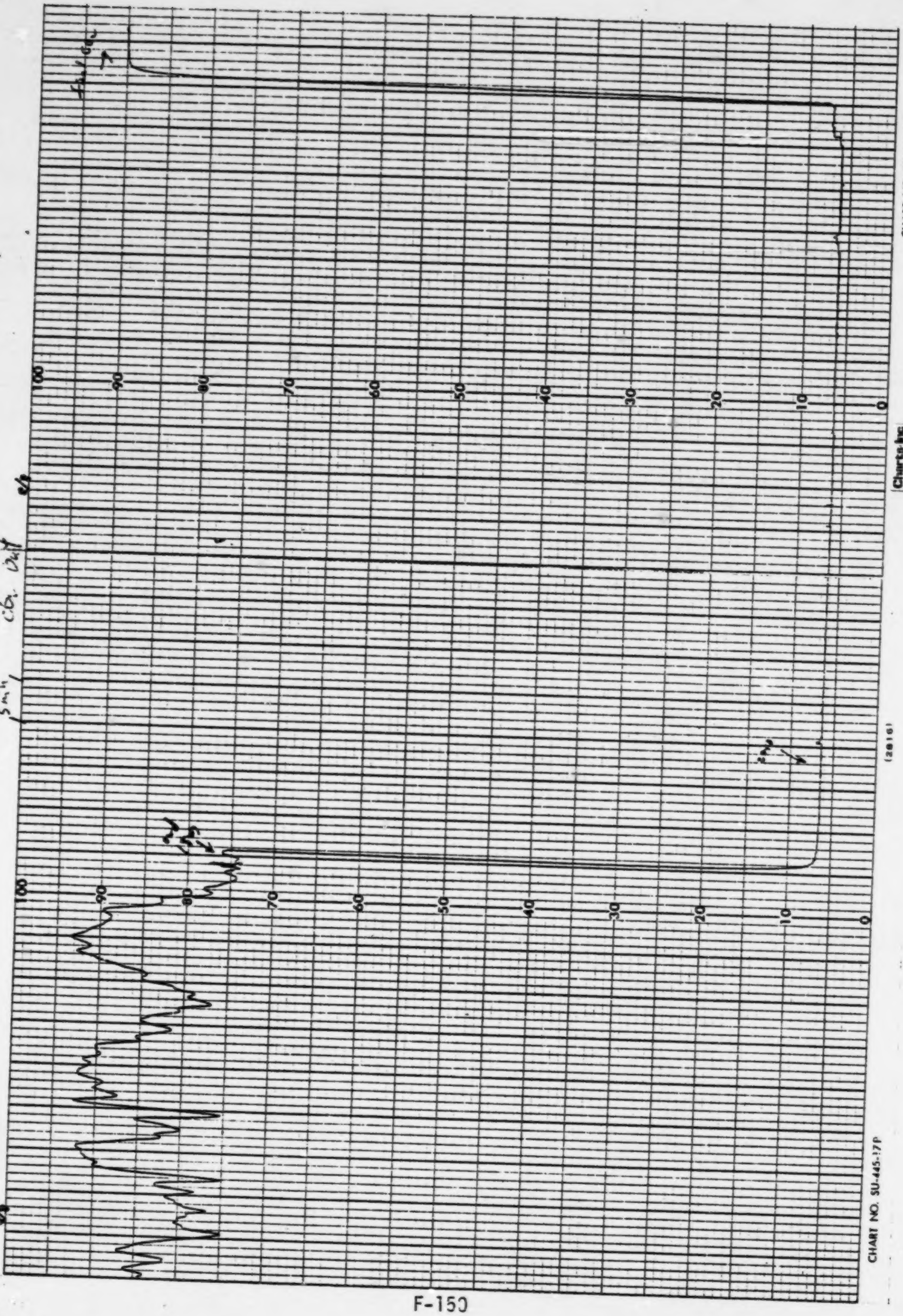

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90
80
70
60
50
40
30
20
10
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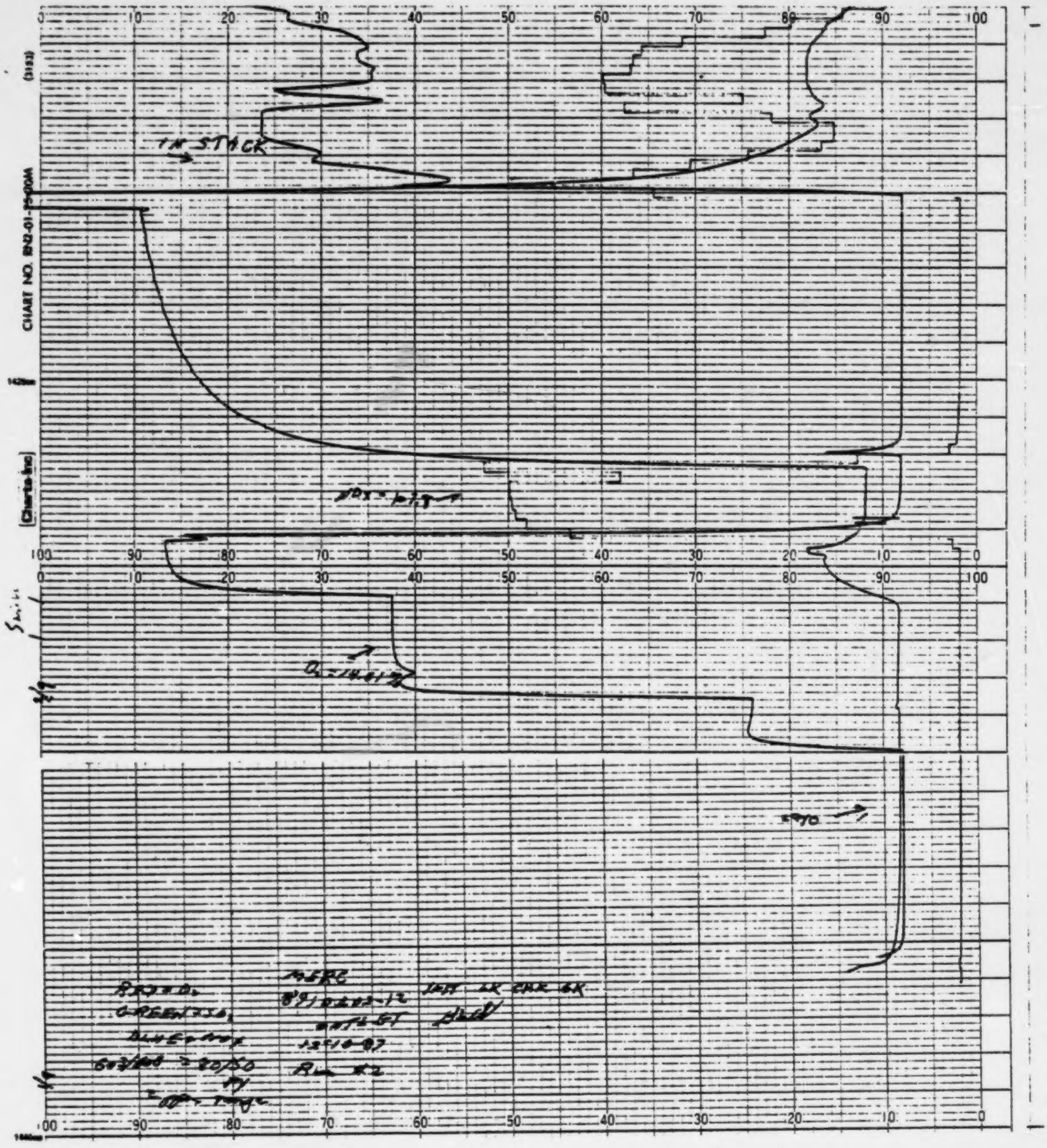
Charts Inc
(2816)
Span Gas
5 min
CO2 Out
zero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Charts Inc
IN STACK
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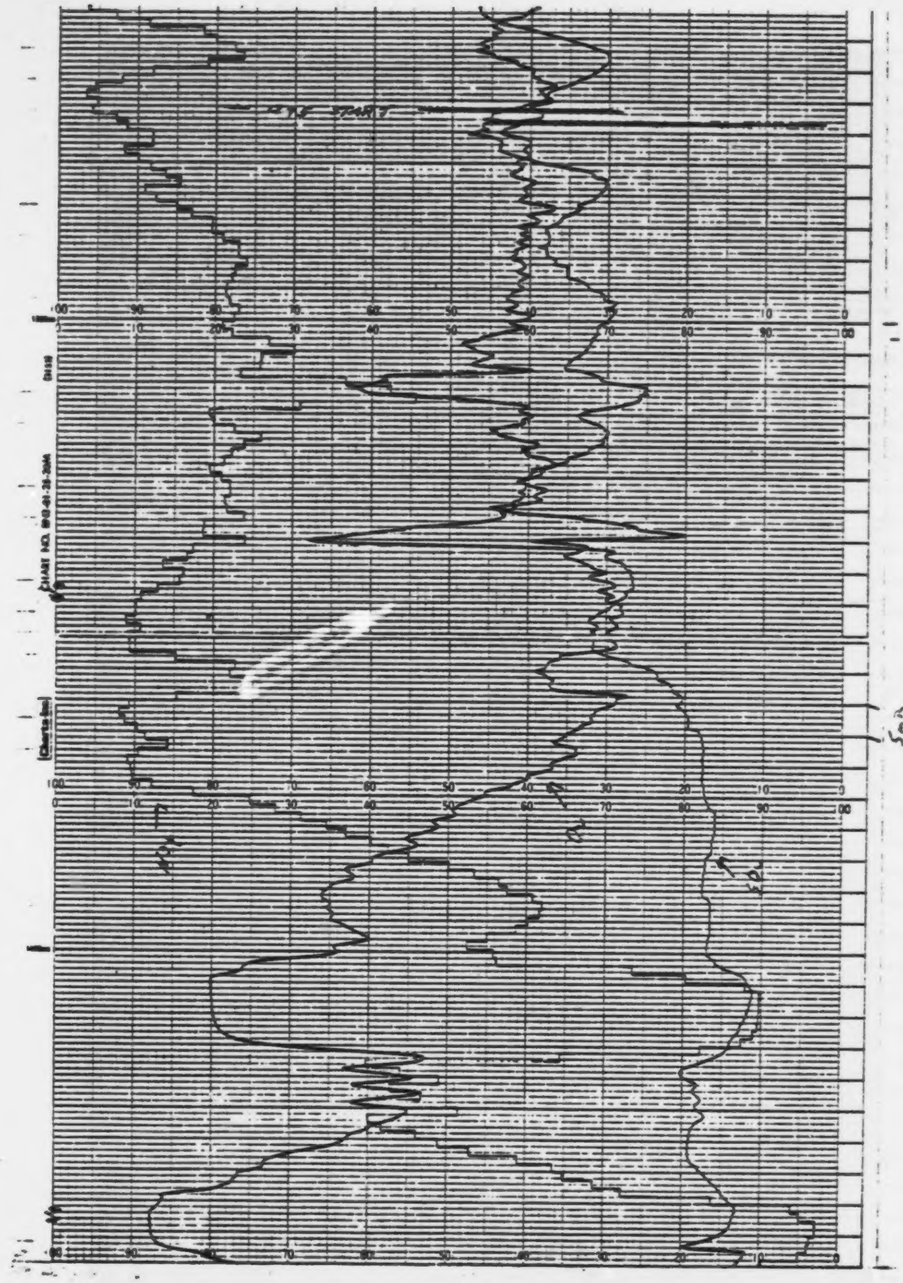
20
30
40
50
60
70
80
90
100
Run #2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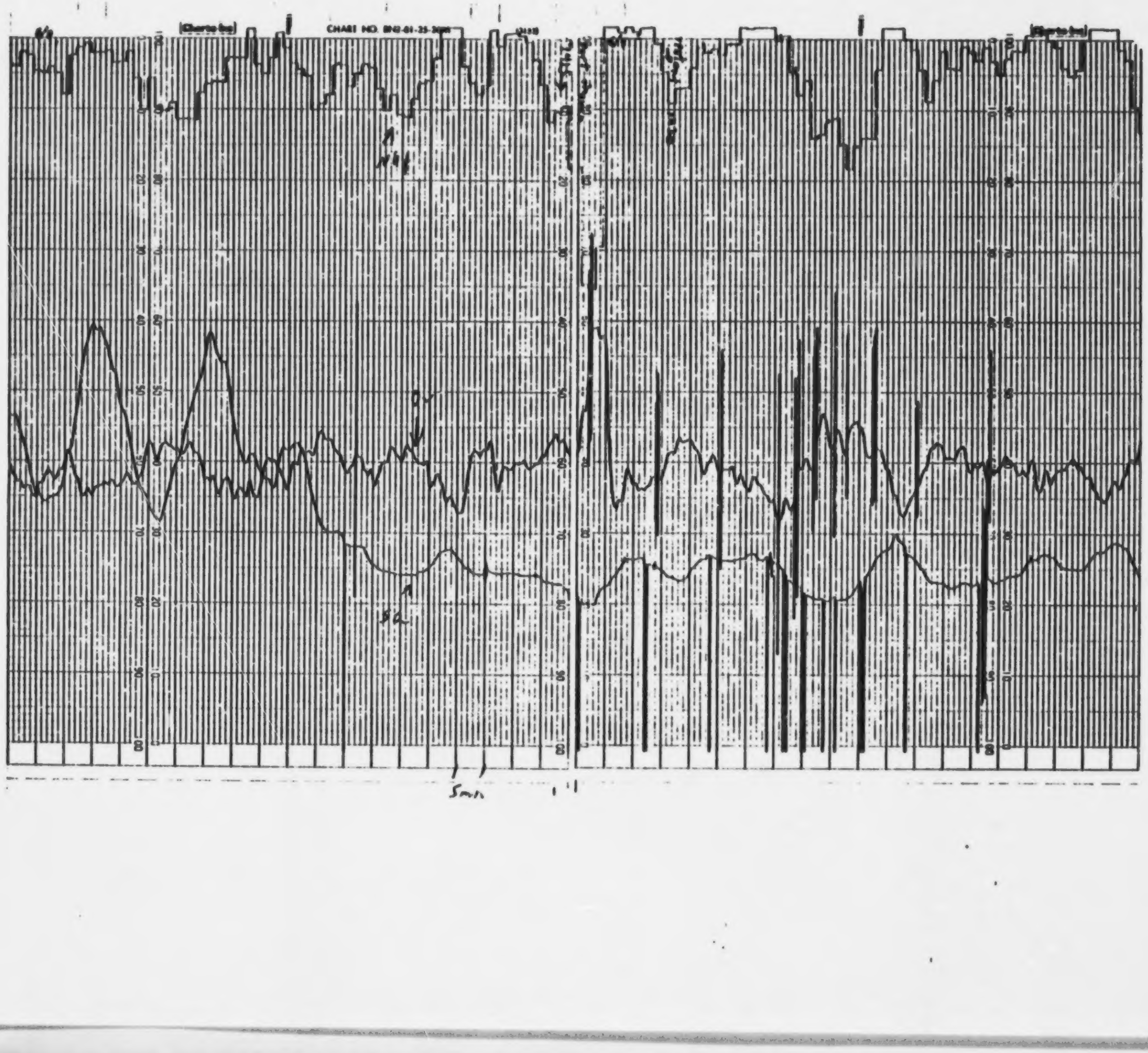
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20
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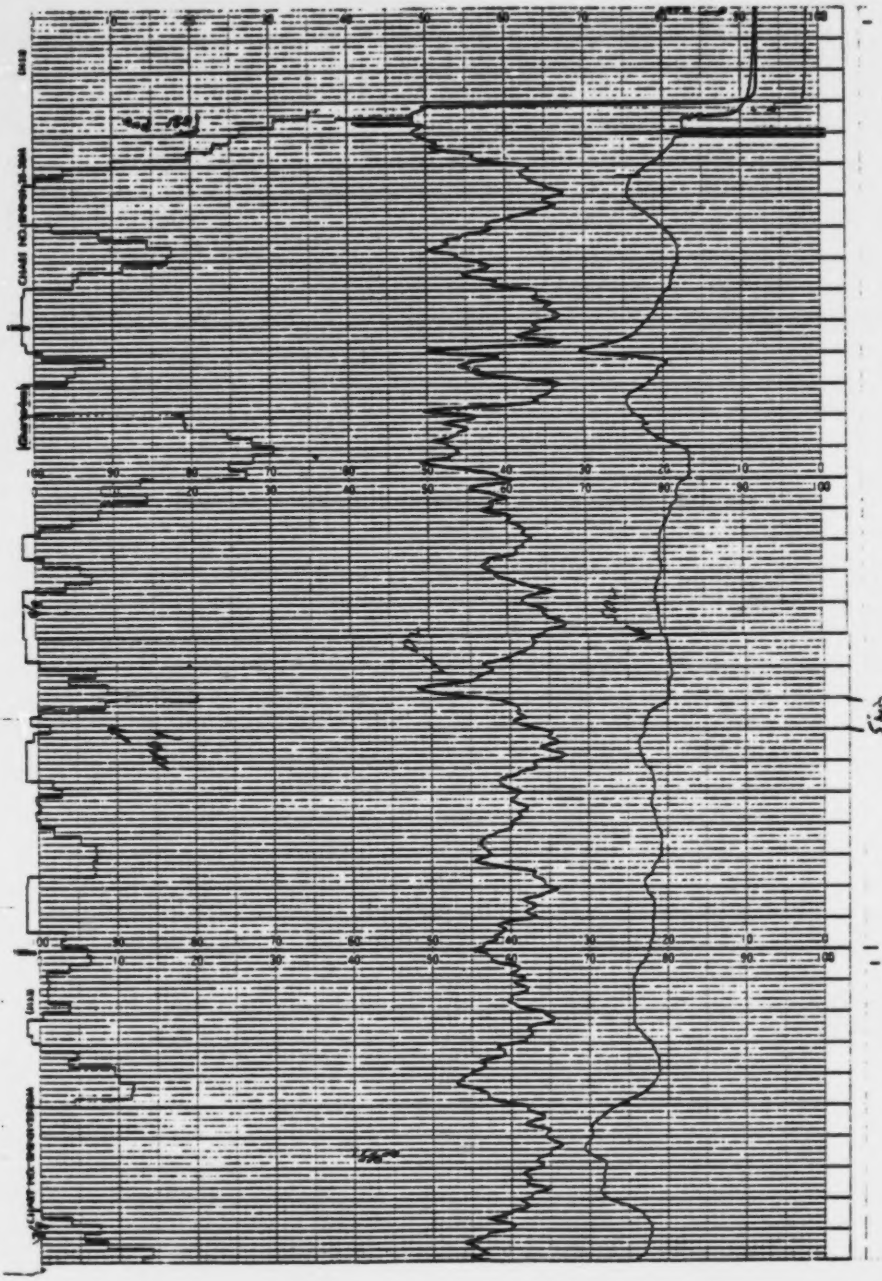
0
5 min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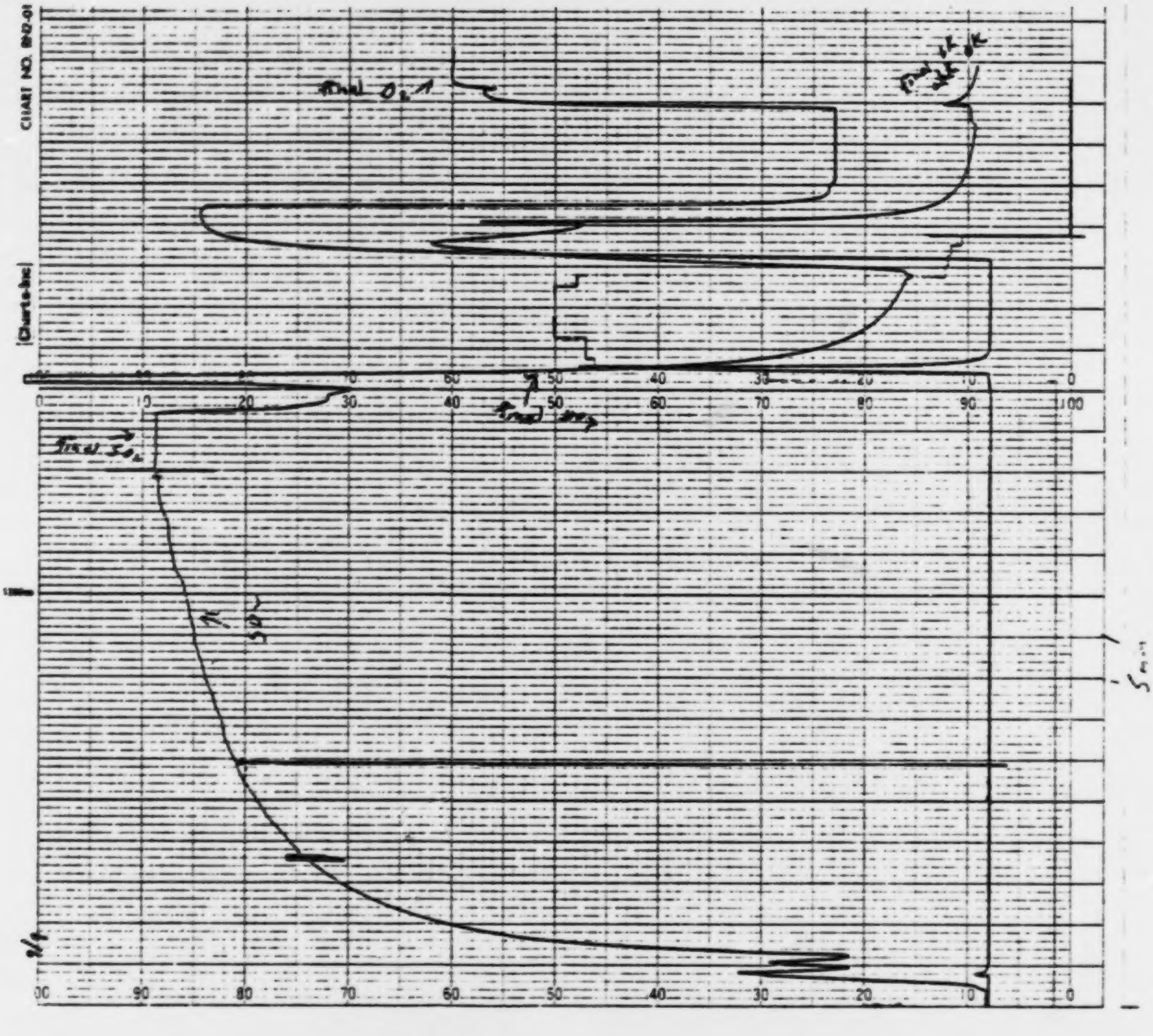

CHART NO.
[Charts-Inc]
Final O_2
Final SO_2
SO_2
5 min
2/1

MR2OUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1245	12.75	8.01	11.42	38.4	201.8
1246	12.77	7.85	11.54	34.7	205.6
1247	12.78	8.19	11.28	33.5	205.7
1248	12.80	8.39	11.07	30.8	207.2
1249	12.82	8.86	10.64	28.3	203.0
1250	12.83	9.63	9.89	26.4	195.7
1251	12.85	10.06	9.41	25.2	185.7
1252	12.87	9.87	9.62	25.8	171.6
1253	12.88	9.56	9.89	28.8	164.7
1254	12.90	9.62	9.86	32.8	167.8
1255	12.92	8.87	10.52	37.2	172.7
1256	12.93	8.36	11.00	41.9	177.8
1257	12.95	7.90	11.39	44.0	192.2
1258	12.97	7.57	11.69	44.1	200.8
1259	12.98	7.46	11.78	43.3	207.5
1300	13.00	7.23	11.99	39.2	207.1
1301	13.02	7.70	11.60	34.2	211.4
1302	13.03	8.05	11.29	31.4	209.7
1303	13.05	7.86	11.47	30.1	205.1
1304	13.07	8.29	11.12	30.8	205.0
1305	13.08	8.70	10.78	31.6	206.6
1306	13.10	7.84	11.53	35.8	204.0
1307	13.12	7.22	12.05	41.0	198.2
1308	13.13	7.30	12.01	49.1	210.5
1309	13.15	7.51	11.83	56.4	212.9
1310	13.17	7.60	11.76	58.5	214.2
1311	13.18	7.67	11.68	57.6	210.7
1312	13.20	7.55	11.80	54.2	211.0
1313	13.22	7.89	11.51	50.2	211.7
1314	13.23	7.63	11.74	45.2	207.8
1315	13.25	7.93	11.47	40.6	208.3
1316	13.27	8.91	10.64	34.7	211.2
1317	13.28	8.77	10.74	31.5	203.5
1318	13.30	8.95	10.59	29.1	193.9
1319	13.32	9.06	10.46	27.1	201.9
1320	13.33	8.91	10.61	29.3	194.8
1321	13.35	8.76	10.73	33.9	192.6
1322	13.37	9.10	10.46	37.3	195.0
1323	13.38	8.74	10.74	42.0	191.0
1324	13.40	8.08	11.35	46.5	190.3
1325	13.42	7.80	11.62	50.2	190.2
1326	13.43	7.42	11.92	55.4	196.9
1327	13.45	7.74	11.67	56.3	200.8
1328	13.47	7.41	11.94	53.1	202.0
1329	13.48	7.34	12.00	50.8	201.9
1330	13.50	7.28	12.03	42.9	207.6
1331	13.52	7.43	11.90	37.9	209.5
1332	13.53	7.38	11.98	37.2	209.5
1333	13.55	8.42	11.09	36.9	216.0
1334	13.57	8.46	11.06	34.4	210.8
1335	13.58	8.01	11.45	33.1	205.2
1336	13.60	7.65	11.75	34.5	207.6

MR2OUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1337	13.62	8.39	11.12	38.7	214.6
1338	13.63	8.81	10.73	39.0	214.2
1339	13.65	8.80	10.73	39.6	209.4
1340	13.67	9.05	10.52	37.1	206.4
1341	13.68	9.47	10.14	31.7	204.3
1342	13.70	9.24	10.34	27.5	197.7
1343	13.72	8.81	10.72	25.5	194.1
1344	13.73	8.28	11.18	25.1	196.9
1345	13.75	8.28	11.19	25.0	203.0
1346	13.77	8.55	10.83	20.3	207.4
1347	13.78	8.17	11.26	22.9	203.7
1348	13.80	7.92	11.50	22.8	202.5
1349	13.82	8.06	11.38	21.3	206.1
1350	13.83	8.52	10.96	19.7	206.9
1351	13.85	8.91	10.62	18.9	203.3
1352	13.87	8.58	10.90	18.6	196.7
1353	13.88	8.97	10.57	18.3	195.0
1354	13.90	8.66	10.84	18.3	195.6
1355	13.92	8.37	11.11	18.3	191.3
1356	13.93	8.06	11.34	18.6	193.0
1357	13.95	7.85	11.53	19.1	198.5
1358	13.97	7.55	11.79	20.0	202.0
1359	13.98	7.09	12.21	21.6	204.9
1400	14.00	6.69	12.55	22.5	213.7
1401	14.02	6.97	12.33	22.2	224.2
1402	14.03	8.52	10.98	20.8	225.3
1403	14.05	8.78	10.71	19.3	218.6
1404	14.07	8.94	10.57	18.5	205.3
1405	14.08	8.88	10.60	18.3	200.6
1406	14.10	7.65	11.70	19.0	198.7
1407	14.12	8.25	11.19	18.6	204.7
1408	14.13	8.31	11.17	18.6	217.4
1409	14.15	8.43	11.02	18.7	213.7
1410	14.17	8.34	11.09	18.5	217.2
1411	14.18	8.36	11.09	18.2	217.3
1412	14.20	8.62	10.86	18.3	215.9
1413	14.22	9.04	10.47	18.2	213.6
1414	14.23	9.41	10.15	17.3	207.9
1415	14.25	9.24	10.31	17.0	199.8
1416	14.27	8.90	10.62	16.7	189.8
1417	14.28	10.16	9.45	16.2	193.0
1418	14.30	12.60	7.00	11.2	193.8
1419	14.32	13.27	6.30	13.7	173.4
1420	14.33	12.69	6.79	13.6	139.1
1421	14.35	8.13	11.14	15.8	137.4
1422	14.37	6.90	12.28	16.8	151.2
1423	14.38	7.72	11.59	18.2	220.6
1424	14.40	7.75	11.60	19.9	223.0
1425	14.42	7.46	11.83	20.9	217.1
1426	14.43	7.53	11.79	21.0	222.0
1427	14.45	7.82	11.44	16.5	217.4
1428	14.47	7.93	11.44	17.6	218.7
1429	14.48	8.67	10.82	19.6	219.1

MR2OUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1430	14.50	8.95	10.54	18.7	214.1
1431	14.52	9.25	10.25	17.9	205.6
1432	14.53	9.25	10.26	17.4	195.8
1433	14.55	8.88	10.59	17.8	199.4
1434	14.57	8.16	11.22	19.4	200.4
1435	14.58	8.54	10.89	20.7	205.5
1436	14.60	8.26	11.15	21.4	211.8
1437	14.62	8.12	11.25	19.2	211.3
1438	14.63	8.17	11.24	20.7	212.2
1439	14.65	7.82	11.55	20.7	210.6
1440	14.67	7.54	11.77	20.9	213.3
1441	14.68	7.74	11.66	21.2	213.9
1442	14.70	7.58	11.76	21.8	221.0
1443	14.72	7.16	12.15	21.6	219.5
1444	14.73	6.87	12.38	20.8	221.3
1445	14.75	6.38	12.78	19.1	223.8
1446	14.77	6.91	12.26	20.1	226.3
1447	14.78	7.12	11.90	17.4	218.1
1448	14.80	8.19	10.85	14.8	216.2
1449	14.82	8.37	10.72	16.5	208.9
1450	14.83	8.81	10.21	11.7	200.6
1451	14.85	10.07	9.14	14.7	200.8
1452	14.87	9.19	9.95	14.6	191.0
1453	14.88	9.25	9.66	12.1	185.5
1454	14.90	8.92	10.18	12.7	188.4
1455	14.92	9.74	9.72	14.5	190.5
1456	14.93	9.83	9.70	14.8	186.1
1457	14.95	9.04	10.40	16.0	178.4
1458	14.97	8.58	10.52	9.2	179.3
1459	14.98	8.86	10.56	17.3	183.6
1500	15.00	8.26	11.10	20.8	184.8
1501	15.02	7.38	11.88	22.2	196.0
1502	15.03	6.66	12.49	23.0	212.8
1503	15.05	6.81	12.40	24.6	224.0
1504	15.07	7.39	11.91	19.7	227.7
1505	15.08	7.95	11.43	21.4	221.3
1506	15.10	8.68	10.79	20.3	213.9
1507	15.12	9.11	10.41	18.6	209.3
1508	15.13	8.85	10.64	17.3	201.6
1509	15.15	8.59	10.88	17.0	198.7
1510	15.17	8.80	10.68	16.6	206.3
1511	15.18	8.83	10.64	16.3	209.8
1512	15.20	8.18	11.25	17.0	206.2
1513	15.22	8.32	11.13	17.1	208.4
1514	15.23	8.06	11.36	16.8	212.7
1515	15.25	7.96	11.37	14.4	210.6
1516	15.27	8.30	11.21	18.1	210.0
1517	15.28	8.60	10.92	17.2	211.8
1518	15.30	8.32	11.17	17.8	207.3
1519	15.32	8.06	11.39	18.3	206.0
1520	15.33	8.18	11.35	18.5	210.4
1521	15.35	8.09	11.38	19.6	212.1
1522	15.37	7.63	11.83	20.9	213.0

MR2OUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1523	15.38	7.91	11.58	21.3	217.6
1524	15.40	8.07	11.47	21.9	218.9
1525	15.42	8.24	11.32	21.4	216.6
1526	15.43	8.50	11.08	20.2	214.4
1527	15.45	8.35	11.17	19.4	211.7
1528	15.47	8.01	11.49	19.3	205.9
1529	15.48	7.74	11.75	19.3	204.1
1530	15.50	7.24	12.18	20.2	207.4
1531	15.52	7.08	12.33	21.9	216.1
1532	15.53	7.63	11.88	22.4	220.7
1533	15.55	7.61	11.89	23.2	221.2
1534	15.57	8.21	11.42	23.8	218.6
1535	15.58	8.58	11.10	23.2	218.9
1536	15.60	9.24	10.57	21.9	211.9
1537	15.62	9.44	10.32	19.4	208.6
1538	15.63	9.75	10.05	17.6	194.2
1539	15.65	9.47	10.28	16.6	186.9
1540	15.67	8.70	10.95	16.2	183.8
1541	15.68	8.68	11.02	16.0	196.9
1542	15.70	8.69	10.97	16.1	203.3
1543	15.72	7.95	11.59	17.0	198.5
1544	15.73	7.93	11.62	18.2	206.8
1545	15.75	7.43	12.05	21.0	215.0
1546	15.77	7.79	11.77	23.3	224.1
1547	15.78	7.93	11.69	23.3	229.1
1548	15.80	7.58	11.94	23.1	223.7
1549	15.82	7.51	11.99	22.8	219.8
1550	15.83	7.12	12.25	22.7	220.6
1551	15.85	6.83	12.52	24.6	223.4
1552	15.87	7.25	12.17	25.9	228.8
1553	15.88	7.37	12.09	25.1	230.2
1554	15.90	7.71	11.79	24.7	227.7
1555	15.92	7.61	11.90	24.6	224.5
1556	15.93	8.12	11.43	23.3	226.0
1557	15.95	9.14	10.54	21.8	225.4
1558	15.97	9.59	10.17	19.8	220.2
1559	15.98	10.15	9.63	17.3	208.5
1600	16.00	9.79	9.95	16.0	193.5
1601	16.02	9.36	10.36	15.1	189.3
1602	16.03	9.07	10.58	14.8	192.3
1603	16.05	8.74	10.89	15.1	194.4
1604	16.07	8.36	11.20	15.4	203.7
1605	16.08	7.80	11.71	16.0	205.7
1606	16.10	7.73	11.79	16.9	212.1
1607	16.12	7.06	12.34	18.0	217.2
1608	16.13	7.58	11.92	18.7	222.3
1609	16.15	8.40	11.16	18.7	223.7
1610	16.17	8.31	11.20	18.7	217.6
1611	16.18	7.97	11.54	18.7	209.8
1612	16.20	8.14	11.39	18.8	210.8
1613	16.22	8.32	11.25	18.8	213.4
1614	16.23	8.58	11.07	18.4	213.0
1615	16.25	9.16	10.51	17.9	213.2

MR2OUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1616	16.27	9.47	10.21	17.0	209.9
1617	16.28	9.07	10.58	16.4	203.6
1618	16.30	8.78	10.84	16.1	201.5
1619	16.32	8.74	10.88	15.7	205.9
1620	16.33	7.87	11.60	15.8	208.7
1621	16.35	7.79	11.70	15.7	214.2
1622	16.37	7.86	11.64	15.5	223.3
1623	16.38	7.31	12.11	15.6	223.3
1624	16.40	7.15	12.23	16.0	222.4
1625	16.42	7.54	11.91	16.8	226.8
1626	16.43	8.01	11.52	17.1	225.9
1627	16.45	9.38	10.32	16.1	220.7
1628	16.47	9.18	10.47	15.4	211.1
1629	16.48	9.39	10.31	14.8	199.7
1630	16.50	9.30	10.41	14.4	199.8
1631	16.52	8.70	10.95	14.5	199.1
1632	16.53	8.33	11.28	14.6	200.8
1633	16.55	8.11	11.48	15.2	206.2
1634	16.57	7.96	11.61	15.5	212.5
1635	16.58	8.34	11.27	15.8	215.6
1636	16.60	8.22	11.36	16.1	215.9
1637	16.62	8.75	10.87	15.8	215.2
1638	16.63	8.43	11.08	15.5	214.4
1639	16.65	7.73	11.68	15.7	209.5
1640	16.67	7.31	12.03	16.2	214.5
1641	16.68	6.88	12.44	17.0	223.1
1642	16.70	7.13	12.20	17.6	221.4
1643	16.72	7.09	12.29	17.9	223.2
1644	16.73	7.51	11.92	17.9	224.6
1645	16.75	8.21	11.32	17.1	222.2
1646	16.77	8.12	11.38	16.9	215.9
1647	16.78	8.33	11.20	16.5	212.8
1648	16.80	9.54	10.14	15.6	217.4
1649	16.82	11.26	8.56	13.7	212.8
1650	16.83	10.10	9.61	13.4	194.6
1651	16.85	9.28	10.38	13.3	172.2
1652	16.87	9.23	10.41	13.0	196.8
1653	16.88	8.61	10.93	13.1	207.0
1654	16.90	7.95	11.51	13.3	199.5
1655	16.92	7.64	11.79	13.5	215.2
1656	16.93	7.40	11.97	13.7	225.4
1657	16.95	6.72	12.54	14.1	231.0
1658	16.97	6.90	12.40	14.4	235.1
1659	16.98	7.28	12.12	14.7	241.5
1700	17.00	7.86	11.64	14.7	232.8
1701	17.02	7.54	11.87	14.9	233.2
1702	17.03	7.50	11.93	15.2	226.7
1703	17.05	8.45	11.12	15.1	229.5
1704	17.07	8.97	10.66	14.8	221.6
1705	17.08	9.18	10.47	14.3	208.2
1706	17.10	8.58	10.97	14.2	200.4
1707	17.12	8.05	11.44	14.5	202.5
1708	17.13	7.75	11.69	14.5	212.1

```
MR2OUT

  TIME                  O2        CO2        SO2        NOx
                        (%)       (%)       (ppm)      (ppm)
   1709     17.15      7.90      11.61       14.4      218.8
   1710     17.17      8.22      11.32       14.4      222.3
   1711     17.18      8.45      11.15       13.9      221.3
   1712     17.20      9.11      10.55       13.2      215.3
   1713     17.22      8.79      10.82       12.8      207.0
   1714     17.23      9.12      10.56       12.2      199.1
   1715     17.25      9.11      10.54       11.8      196.9
   1716     17.27      8.62      11.05       11.6      187.2
   1717     17.28      9.86       9.97       10.7      193.4
   1718     17.30     10.99       8.88        9.8      188.8
   1719     17.32     10.14       9.64        9.9      165.2
   1720     17.33     10.31       9.52        9.9      159.9
   1721     17.35     10.45       9.36       10.6      156.6
   1722     17.37      9.86       9.90       13.2      150.5
   1723     17.38     10.17       9.61       15.6      153.2
   1724     17.40     10.10       9.72       16.7      159.4
   1725     17.42      9.27      10.32       17.2      169.0
   1726     17.43      7.38      12.04       18.7      174.0
   1727     17.45      6.93      12.38       19.2      203.1
   1728     17.47      6.94      12.38       18.7      230.2
   1729     17.48      8.92      10.73       16.8      238.7
   1730     17.50      9.72       9.99       15.2      229.7
   1731     17.52      9.17      10.46       14.4      212.9
   1732     17.53     10.37       9.36       13.5      204.8
   1733     17.55      7.61      11.74       19.7      199.5
   1734     17.57      7.85      11.65       24.4      204.6
   1735     17.58      7.43      11.96       19.9      215.7
   1736     17.60      7.08      12.23       17.6      221.6
   1737     17.62      6.87      12.43       16.4      230.5
   1738     17.63      7.06      12.31       15.4      238.5
   1739     17.65      7.47      11.99       14.6      242.2
   1740     17.67      8.05      11.60       14.1      239.8
   1741     17.68      8.99      10.75       13.2      235.5
   1742     17.70      9.64      10.19       12.4      227.1
   1743     17.72      9.10      10.70       12.1      213.3
   1744     17.73      9.95       9.95       11.8      203.9
   1745     17.75     10.71       9.22       11.4      198.7
   1746     17.77     10.36       9.51       11.4      186.6
   1747     17.78      9.57      10.20       11.7      178.0
   1748     17.80      9.00      10.77       12.4      179.0
   1749     17.82      8.34      11.32       13.6      187.8
   1750     17.83      7.30      12.20       14.9      201.1
   1751     17.85      7.05      12.44       16.4      213.8
   1752     17.87      6.69      12.72       17.8      223.5
   1753     17.88      7.14      12.39       18.8      226.5
   1754     17.90      7.74      11.89       18.9      226.2
   1755     17.92      7.83      11.81       18.5      222.5
   1756     17.93      8.51      11.24       17.6      217.7
   1757     17.95      9.63      10.27       16.1      213.5
   1758     17.97     10.77       9.18       14.3      204.9
   1759     17.98     11.06       8.91       13.0      190.5
   1800     18.00     11.45       8.54       11.9      171.7
   1801     18.02     11.40       8.58        8.9      165.1
```

```
MR2OUT

   TIME                  O2        CO2        SO2        NOx
                         (%)       (%)        (ppm)      (ppm)
    1802     18.03     11.39       8.50        9.6      160.5

Average=                8.42      11.07      21.24     206.44
Min=                    6.38       6.30       8.90     137.40
Max=                   13.27      12.78      58.50     242.20
Std Dev=                1.04        .94       9.66      16.98
Variance=               1.09        .88      93.30     288.46
```

F.4 Run 3 - Spray Dryer Inlet
Spray Dryer Outlet (Midpoint)
Baghouse Outlet

```
MR3AIN
MERC RUN 3A
12-12-1987
INLET
8910-L02-12
LCONE
              0         1         2         3         4
           O2       CO2        CO       THC       SO2
08:24           1.66      1.84      2.76      9.19      8.52
08:25           1.60      1.85      2.61      5.98      8.52
08:26           1.64      1.97      2.54      3.79      8.52
08:26 INIT. ZERO
 0   O2    1.64
 1  CO2    1.97
 2   CO    2.54
 4  SO2    8.52
08:41          51.76     80.91     49.80      1.68      8.62
08:42          51.82     80.89     49.86      1.84      8.63
08:43          51.86     80.88     49.83      1.90      8.62
08:44          51.79     80.73     49.72      1.95      8.63
08:45          51.17     80.95     49.86      1.96      8.60
08:46          51.07     81.00     49.94      1.92      8.60
08:47          51.05     80.87     49.90      1.89      8.61
08:47 INIT. SPAN
 0   O2  51.05     12.09
 1  CO2  80.87     12.00
 2   CO  49.90    338.00
09:06           2.77      2.02      2.76      3.30     86.73
09:07           2.78      1.96      2.93      2.55     86.75
09:07 INIT. SPAN
 4  SO2  86.75    413.00
09:31           2.39      1.95      2.86      2.48      8.11
09:32           2.42      1.95      2.73      2.48      8.10
09:32 INIT. ZERO
 4  SO2   8.10



09:35  51.60  72.48  11.83   2.08  10.11
09:35  12.22   9.88   52.5    0.2   10.6

09:36  45.86  70.74  12.87   2.30  11.54
09:36  10.82   9.47   58.8    0.2   18.1

09:37  43.75  68.88  14.06   2.15  15.49
09:37  10.30   9.03   66.1    0.2   38.8

09:38  45.60  63.96  17.05   2.16  19.10
09:38  10.76   7.93   85.0    0.2   57.8

09:39  48.18  65.17  18.85   2.67  21.28
09:39  11.39   8.20   95.9    0.3   69.2

09:40  48.56  62.58  20.43   1.37  21.92
09:40  11.48   7.64  106.4    0.1   72.6

09:41  49.69  62.76  21.76  44.19  21.54
09:41  11.76   7.68  114.7    4.5   70.6
09:42         49.88  61.44  18.31 101.74  20.41
09:43         50.42  57.33  20.11  30.41  19.50
09:43 INIT. SPAN
 3  THC  30.41    10.20

09:44  53.96  52.61  35.97  19.66  17.72
09:44  12.80   5.66  214.3    6.6   50.5

09:45  56.00  52.90  37.90  26.14  16.54
09:45  13.30   5.72  228.0    8.8   44.3
```

Initial leak ck
pass

```
09:46  57.70  43.17  41.41  20.64  15.2
09:46  13.72   4.06  258.3    6.9   37.3

09:47  62.74  38.08  62.22  14.20  13.6
09:47  14.95   3.30  430.5    4.8   30.1

09:48  65.98  38.08  78.52  14.18  12.81
09:48  15.74   3.30  580.8    4.8   24.7

09:49  66.61  38.30  78.35  14.22  12.19
09:49  15.90   3.33  579.0    4.8   21.5

09:50  66.88  35.85  82.93  14.27  11.66
09:50  15.96   2.99  626.3    4.8   18.7

09:51  67.45  38.43  83.01  14.25  11.32
09:51  16.10   3.35  624.8    4.8   17.1

09:52  66.85  36.75  80.87  12.12  11.21
09:52  15.96   3.11  604.9    4.1   16.3

09:53  67.27  35.60  77.54   2.53  11.12
09:53  16.06   2.95  573.3    0.8   15.9

09:54  67.96  33.50  77.55   1.55  10.99
09:54  16.23   2.68  575.1    0.5   15.2

09:55  68.72  35.72  79.21   1.04  10.85
09:55  16.41   2.97  589.5    0.3   14.4

09:56  68.00  35.86  78.10   0.00  10.77
09:56  16.24   2.99  578.6    0.0   14.0

09:57  67.99  36.30  79.61   0.00  10.74
09:57  16.24   3.05  593.0    0.0   13.9

09:58  67.77  34.35  77.60   0.29  10.73
09:58  16.18   2.79  574.9    0.1   13.8

09:59  68.18  35.30  77.35   0.00  10.66
09:59  16.28   2.91  571.7    0.0   13.5

10:00  68.33  33.22  81.23   0.00  10.57
10:00  16.32   2.64  611.5    0.0   13.0

10:01  68.86  37.97  87.55   0.00  10.56
10:01  16.45   3.28  671.2    0.0   12.9

10:02  66.81  40.66  84.91   0.00  10.69
10:02  15.95   3.67  641.6    0.0   13.6

10:03  65.61  42.08  87.66   0.00  10.87
10:03  15.65   3.89  668.1    0.0   14.6

10:04  64.71  39.38  84.77   0.00  11.01
10:04  15.43   3.49  641.5    0.0   15.3

10:05  65.70  37.87  93.17   0.00  10.96
10:05  15.67   3.27  730.1    0.0   15.0

10:06  66.70  34.80  92.13   0.00  10.81
10:06  15.92   2.85  722.1    0.0   14.2

10:07  68.27  30.87  89.45   0.00  10.54
10:07  16.30   2.35  697.5    0.0   12.8

10:08  70.20  29.18  88.43   0.00  10.27
10:08  16.78   2.15  688.2    0.0   11.4

10:09  70.99  32.10  92.01   0.00  10.15
10:09  16.97   2.50  723.5    0.0   10.8

10:10  70.51  30.77  92.62   0.00  10.06
10:10  16.85   2.34  731.2    0.0   10.3

10:11  70.75  29.86  87.80   0.00   9.97
10:11  16.91   2.23  681.1    0.0    9.8

10:12  70.90  33.28  83.97   0.00   9.93
10:12  16.95   2.65  638.9    0.0    9.6
```

```
10:13  69.99  31.89  85.67   0.00   9.91
10:13  16.72   2.47  657.4   0.0    9.5

10:14  70.02  32.84  88.57   0.00   9.90
10:14  16.73   2.59  686.5   0.0    9.4

10:15  69.87  32.51  87.96   0.00   9.90
10:15  16.69   2.55  680.5   0.0    9.5

10:16  69.77  31.43  88.00   0.00   9.86
10:16  16.67   2.42  681.9   0.0    9.3

10:17  70.37  29.34  89.19   0.00   9.78
10:17  16.82   2.17  696.1   0.0    8.8

10:18  71.10  30.10  89.47   0.00   9.71
10:18  17.00   2.26  698.3   0.0    8.5

10:19  71.01  30.35  90.33   0.00   9.67
10:19  16.97   2.29  707.2   0.0    8.2

10:20  71.11  28.95  90.43   0.00   9.60
10:20  17.00   2.12  709.5   0.0    7.9

10:21  72.17  24.03  90.63   0.00   9.49
10:21  17.26   1.59  715.5   0.0    7.3

10:22  74.31  27.71  96.99   0.00   9.55
10:22  17.78   1.98  781.5   0.0    7.6

10:23  73.69  29.68 104.62   0.00   9.63
10:23  17.63   2.21  865.7   0.0    8.0

10:24  72.50  31.89 117.32   0.00   9.75
10:24  17.34   2.47 1015.2   0.0    8.7

10:25  71.64  29.94 114.76   0.00   9.89
10:25  17.13   2.24  986.0   0.0    9.4

10:26  72.15  26.69 101.42   0.00   9.87
10:26  17.25   1.87  832.1   0.0    9.3

10:27  73.60  24.35  83.23   0.00   9.77
10:27  17.61   1.62  638.2   0.0    8.8

10:28  74.06  35.11  99.23   0.00   9.88
10:28  17.72   2.89  798.9   0.0    9.3

10:29  70.44  36.50 118.04   0.00  10.09
10:29  16.83   3.08 1017.8   0.0   10.5

10:30  69.48  33.84 113.38   0.00  10.10
10:30  16.60   2.72  964.3   0.0   10.5

10:31  69.98  35.35 113.35   0.00  10.13
10:31  16.72   2.92  962.0   0.0   10.6

10:32  69.29  37.53 117.18   0.00  10.23
10:32  16.55   3.22 1005.6   0.0   11.2

10:33  68.46  38.34 120.92   0.00  10.31
10:33  16.35   3.34 1050.9   0.0   11.6

10:34  67.91  39.57 129.55   0.00  10.38
10:34  16.22   3.51 1159.9   0.0   12.0

10:35  67.36  41.33 143.73   0.00  10.51
10:35  16.08   3.77 1351.0   0.0   12.6

10:36  66.76  40.45 148.77   0.00  10.63
10:36  15.93   3.64 1425.6   0.0   13.3

10:37  67.21  42.17 150.33   0.00  10.65
10:37  16.04   3.90 1444.7   0.0   13.4

10:38  65.58  49.16 138.41   0.00  10.92
10:38  15.65   5.05 1259.4   0.0   14.8

10:39  63.05  50.38 132.53   0.00  11.01
10:39  15.03   5.26 1177.9   0.0   15.3

10:40  60.92  56.15 101.59   0.00  11.35
```

```
10:40  14.50   6.33  796.0   0.0   17.1

10:41  57.68  40.89  62.77   0.00  11.20
10:41  13.71   3.71  433.4   0.0   16.3

10:42  63.21  60.08  43.19   0.00  11.31
10:42  15.07   7.11  263.1   0.0   16.9

10:43  56.95  64.23  36.93   0.00  12.17
10:43  13.53   7.99  215.7   0.0   21.4

10:44  50.94  72.83  26.74   0.00  12.99
10:44  12.06   9.96  143.3   0.0   25.7

10:45  44.13  73.47  19.98   2.64  13.99
10:45  10.40  10.12  100.8   0.9   30.9

10:46  41.65  73.64  17.66   1.66  14.45
10:46   9.79  10.16   86.6   0.6   33.3

10:47  40.42  76.86  15.91   1.31  14.92
10:47   9.49  10.96   75.5   0.4   35.8

10:48  37.60  80.80  14.42   1.16  15.56
10:48   8.80  11.98   66.0   0.4   39.2


10:49         32.96  78.65  13.36   0.00  15.89
10:50         34.54  77.71  15.24   6.30  15.64
10:51         36.31  78.74  15.45  10.26  15.63
10:52         35.98  79.82  14.80  10.29  15.93
10:52 INIT. ZERO
 3  THC  10.29
10:53         36.78  76.30  17.15  86.70  13.05
10:54         37.52  79.72  17.03  86.71  12.41
10:54 INIT. SPAN
 3  THC  86.71    10.20


10:55  35.45  80.07  15.00  50.67  12.11
10:55   8.27  11.79   69.5    5.4  21.1

10:56  35.26  77.08  15.51  71.16  12.27
10:56   8.23  11.02   73.1    8.1  21.9

10:57  37.20  79.15  16.38  58.41  12.50
10:57   8.70  11.55   77.7    6.4  23.1

10:58  35.99  80.09  15.50  42.50  13.28
10:58   8.40  11.80   72.4    4.3  27.2

10:59  34.71  81.40  15.91  35.32  14.47
10:59   8.09  12.14   74.5    3.3  33.4

11:00  33.49  79.87  15.18  31.25  15.54
11:00   7.79  11.74   70.6    2.8  39.1

11:01  34.32  79.23  15.16  32.16  16.43
11:01   8.00  11.57   70.6    2.9  43.7

11:02  35.80  76.91  16.87  29.45  16.35
11:02   8.36  10.97   81.2    2.6  43.3

11:03  36.79  81.36  16.44  27.79  17.35
11:03   8.60  12.13   77.6    2.3  48.6

11:04  33.74  83.22  15.69  27.37  19.42
11:04   7.85  12.63   72.8    2.3  59.5

11:05  31.50  84.32  16.13  29.67  22.50
11:05   7.31  12.93   75.1    2.6  75.6

11:06  29.27  85.27  16.74  28.97  25.27
11:06   6.76  13.19   78.4    2.5  90.2

11:07  28.51  82.84  16.37  29.48  27.30
11:07   6.57  12.53   76.8    2.6 100.9
```

```
11:08   30.01   85.75   17.33   29.72   28.99
11:08    6.94   13.33    81.7     2.6   109.7

11:09   27.53   86.20   18.14   27.26   30.96
11:09    6.33   13.45    86.2     2.3   120.0

11:10   26.57   79.60   16.27   30.70   30.66
11:10    6.10   11.67    77.0     2.7   118.5

11:11   33.77   73.73   22.17   27.54   26.24
11:11    7.86   10.18   114.1     2.3    95.3

11:12   37.59   81.18   19.01   26.75   26.52
11:12    8.80   12.08    92.8     2.2    96.7

11:13   35.66   73.64   19.39   28.83   26.82
11:13    8.32   10.16    97.1     2.5    98.3

11:14   37.49   86.34   21.24   28.73   28.58
11:14    8.77   13.49   104.4     2.5   107.5

11:15   28.66   88.40   17.81   28.70   32.49
11:15    6.61   14.08    83.7     2.5   128.1

11:16   24.46   84.71   16.53   25.53   37.38
11:16    5.58   13.04    77.3     2.0   153.7

11:17   27.20   82.10   15.70   27.36   37.23
11:17    6.25   12.33    73.1     2.3   153.0

11:18   31.31   71.35   17.32   27.22   36.90
11:18    7.26    9.61    85.1     2.3   151.2

11:19   40.90   72.60   26.34   27.41   34.60
11:19    9.61    9.91   140.8     2.3   139.2

11:20   41.85   76.34   22.77   26.47   39.60
11:20    9.84   10.83   117.0     2.2   165.4

11:21   39.54   74.00   21.80   27.48   44.48
11:21    9.27   10.25   111.7     2.3   191.0

11:22   40.50   74.45   23.95   29.96   47.11
11:22    9.51   10.36   125.0     2.6   204.9

11:23   39.57   81.43   24.83   28.25   47.11
11:23    9.28   12.15   127.9     2.4   204.8

11:24   33.63   84.14   19.69   29.60   45.69
11:24    7.83   12.88    95.9     2.6   197.4

11:25   29.43   84.42   19.68   27.31   47.95
11:25    6.80   12.96    95.8     2.3   209.2

11:26   29.44   79.38   20.01   25.86   42.09
11:26    6.80   11.61    99.3     2.1   178.5

11:27   33.90   76.93   20.34   23.80   37.62
11:27    7.89   10.98   102.0     1.8   155.0

11:28   36.47   77.82   19.10   23.50   38.20
11:28    8.52   11.21    94.2     1.8   158.1

11:29   36.62   79.58   18.97   22.57   38.41
11:29    8.56   11.66    92.9     1.6   159.2

11:30   34.02   82.69   16.36   23.61   39.86
11:30    7.92   12.49    76.8     1.8   166.8

11:31   32.93   75.56   16.88   22.54   37.44
11:31    7.66   10.63    81.5     1.6   154.1

11:32   38.25   76.15   20.05   23.79   35.05
11:32    8.96   10.78   100.4     1.8   141.5

11:33   39.42   75.96   20.33   22.88   31.80
11:33    9.24   10.73   102.1     1.7   124.4

11:34   38.09   79.75   19.22   23.60   32.52
11:34    8.92   11.71    94.4     1.8   128.2
```

Start - 1117

```
11:35  36.43  79.64  20.53  22.72  29.94
11:35   8.51  11.68  102.3    1.6  114.7

11:36  35.77  79.38  20.07  21.70  31.88
11:36   8.35  11.61   99.6    1.5  124.9

11:37  34.92  80.32  18.99  22.89  33.44
11:37   8.14  11.86   92.9    1.7  133.1

11:38  35.28  77.86  20.06  21.97  31.45        Stop 1139
11:38   8.23  11.22  100.0    1.6  122.6

11:39  37.04  74.38  20.38  21.11  30.73
11:39   8.66  10.34  102.9    1.4  118.8

11:40  39.21  76.78  19.69  22.12  28.16
11:40   9.19  10.94   98.0    1.6  105.3

11:41  36.71  78.48  16.60  21.08  26.78
11:41   8.58  11.38   79.2    1.4   98.1

11:42  34.47  81.09  16.14  20.41  27.92
11:42   8.03  12.06   75.9    1.4  104.1

11:43  30.42  80.64  14.62  22.02  28.10
11:43   7.04  11.94   67.2    1.6  105.1

11:44  33.13  68.05  20.22  22.89  25.32
11:44   7.70   8.84  103.7    1.7   90.4

11:45  44.60  54.92  36.81  28.34  21.08
11:45  10.51   6.10  219.3    2.4   68.2

11:46  53.85  59.77  43.55  20.84  18.40
11:46  12.78   7.05  266.0    1.4   54.1

11:47  47.86  78.02  18.06  18.94  22.49
11:47  11.31  11.26   87.9    1.2   75.6

11:48  36.52  78.30  13.32  19.84  26.54
11:48   8.53  11.33   60.1    1.3   96.8

11:49  33.62  79.04  14.46  19.98  27.41
11:49   7.82  11.52   66.6    1.3  101.4

11:50  33.53  75.92  16.32  20.11  28.92
11:50   7.80  10.72   78.1    1.3  109.3

11:51  37.19  70.93  18.73  22.14  26.55
11:51   8.70   9.51   93.8    1.6   96.9

11:52  41.94  68.53  20.53  21.99  23.59
11:52   9.86   8.95  105.5    1.6   81.4

11:53  45.11  67.48  22.97  22.88  23.25
11:53  10.64   8.71  121.1    1.7   79.6

11:54  45.34  70.52  21.88  21.09  22.77
11:54  10.69   9.41  113.3    1.4   77.0

11:55  43.71  70.50  20.67  21.13  23.64
11:55  10.29   9.41  105.8    1.4   81.6

11:56  43.05  70.65  21.29  22.67  25.09
11:56  10.13   9.44  109.6    1.7   89.2

11:57  44.39  70.07  27.01  20.68  23.86
11:57  10.46   9.31  146.1    1.4   82.8

11:58  44.51  72.37  23.97  20.78  25.98        Restart 1200
11:58  10.49   9.85  125.9    1.4   93.9

11:59  43.01  73.77  23.70  20.88  27.51
11:59  10.12  10.19  123.7    1.4  101.9

12:00  41.70  73.78  23.25  21.69  25.67
12:00   9.80  10.20  120.8    1.5   92.3

12:01  40.73  77.80  22.45  21.10  29.05
12:01   9.56  11.20  114.6    1.4  110.0

12:02  37.00  80.13  21.53  21.05  32.13
```

```
12:02    8.65   11.81   108.2     1.4   126.2

12:03   34.40   79.51   20.42   21.49   32.62
12:03    8.02   11.64   101.6     1.5   128.8

12:04   34.62   77.65   20.21   21.81   29.45
12:04    8.07   11.16   101.0     1.5   112.1

12:05   36.46   78.75   22.00   21.33   29.48
12:05    8.52   11.45   111.5     1.5   112.3

12:06   35.36   78.73   20.24   21.37   31.36
12:06    8.25   11.44   100.8     1.5   122.2

12:07   35.79   77.48   20.10   21.40   29.81
12:07    8.36   11.12   100.4     1.5   114.0

12:08   37.18   76.04   21.25   20.36   29.64
12:08    8.70   10.75   107.8     1.3   113.1

12:09   37.72   78.32   20.30   20.07   30.08
12:09    8.83   11.34   101.3     1.3   115.4

12:10   36.13   79.15   19.47   21.80   31.45
12:10    8.44   11.55    96.1     1.5   122.6

12:11   35.35   77.56   20.22   21.65   29.39
12:11    8.25   11.14   101.1     1.5   111.8

12:12   36.26   78.59   20.03   20.74   30.31
12:12    8.47   11.40    99.6     1.4   116.6

12:13   35.94   78.43   19.30   20.86   31.78
12:13    8.39   11.36    95.2     1.4   124.4

12:14   35.92   77.39   20.07   20.62   31.51
12:14    8.39   11.10   100.2     1.4   122.9

12:15   36.76   77.87   19.65   20.11   29.34
12:15    8.59   11.22    97.5     1.3   111.5

12:16   36.04   77.99   18.63   20.53   31.60
12:16    8.42   11.25    91.3     1.4   123.4

12:17   36.29   78.74   18.98   19.68   30.34
12:17    8.48   11.44    93.3     1.3   116.8

12:18   35.00   79.20   17.82   19.34   31.43
12:18    8.16   11.56    86.2     1.2   122.5

12:19   35.38   76.36   18.32   19.57   31.58
12:19    8.26   10.84    89.9     1.2   123.3

12:20   37.57   76.92   19.94   19.84   29.21
12:20    8.79   10.98    99.5     1.3   110.8

12:21   37.30   76.24   18.69   19.11   28.83
12:21    8.72   10.81    92.2     1.2   108.9

12:22   38.72   73.13   19.44   19.73   27.05
12:22    9.07   10.04    97.5     1.3    99.5

12:23   40.72   75.25   20.80   18.73   27.13
12:23    9.56   10.56   105.2     1.1   100.0

12:24   38.98   79.11   19.05   18.03   29.12
12:24    9.14   11.54    93.5     1.0   110.4

12:25   35.47   78.80   16.68   18.22   31.44
12:25    8.28   11.46    79.6     1.1   122.6

12:26   35.18   79.05   17.52   18.75   30.46
12:26    8.21   11.52    84.5     1.1   117.4

12:27   34.49   78.52   16.99   17.85   31.17
12:27    8.04   11.39    81.5     1.0   121.1

12:28   35.82   76.07   17.48   17.81   31.35
12:28    8.36   10.76    85.0     1.0   122.1

12:29   37.71   76.65   17.77   17.88   31.10
12:29    8.83   10.91    86.6     1.0   120.8

12:30   37.60   75.73   17.59   18.93   30.62
12:30    8.80   10.68    85.7     1.2   118.2

12:31   38.81   76.02   18.52   19.03   27.34
12:31    9.09   10.75    91.2     1.2   101.1

12:32   38.18   78.00   18.28   18.59   29.21
12:32    8.94   11.25    89.2     1.1   110.9

12:33   37.56   75.95   18.39   19.33   30.03
12:33    8.79   10.73    90.5     1.2   115.2

12:34   36.85   81.41   18.13   19.15   29.88
12:34    8.62   12.14    87.5     1.2   114.4

12:35   33.19   82.41   15.97   18.35   31.99
12:35    7.72   12.41    74.6     1.1   125.5

12:36   31.23   82.13   15.21   18.54   33.79
12:36    7.24   12.34    70.3     1.1   134.9

12:37   30.73   82.23   14.62   18.04   32.88
12:37    7.12   12.36    66.9     1.0   130.2

12:38   31.30   79.95   16.13   18.20   33.20
12:38    7.26   11.76    76.1     1.1   131.8

12:39   32.95   79.82   17.55   18.30   31.02
12:39    7.66   11.73    84.5     1.1   120.4

12:40   33.64   80.72   17.28   18.11   31.47
12:40    7.83   11.96    82.6     1.0   122.7

12:41   32.55   81.88   16.68   18.03   31.22
12:41    7.56   12.27    78.8     1.0   121.4

12:42   32.17   81.77   16.12   17.53   32.68
12:42    7.47   12.24    75.6     1.0   129.1

12:43   31.62   80.58   15.05   17.32   33.45
12:43    7.33   11.92    69.7     0.9   133.1

12:44   33.75   75.73   15.99   18.22   32.05
12:44    7.86   10.68    76.2     1.1   125.7

12:45   38.40   72.29   17.87   17.73   28.18
12:45    8.99    9.84    88.2     1.0   105.5

12:46   42.62   67.35   19.66   18.81   26.50
12:46   10.03    8.68   100.3     1.1    96.6

12:47   47.45   66.76   24.97   18.49   25.14
12:47   11.21    8.55   134.1     1.1    89.5

12:48   46.65   74.68   21.24   17.54   27.72
12:48   11.01   10.42   108.1     1.0   103.0

12:49   40.61   79.03   16.63   17.43   30.36
12:49    9.54   11.52    79.2     1.0   116.9

12:50   36.66   75.95   15.66   17.11   29.62
12:50    8.57   10.73    74.2     0.9   113.0

12:51   38.42   75.00   17.20   17.25   30.13
12:51    9.00   10.50    83.5     0.9   115.7

12:52   39.54   75.55   17.20   17.70   28.12
12:52    9.27   10.63    83.4     1.0   105.1

12:53   39.07   76.95   17.09   17.12   29.28
12:53    9.16   10.98    82.4     0.9   111.2

12:54   37.06   78.81   16.07   16.79   31.68
12:54    8.67   11.46    76.0     0.9   123.8

12:55   35.57   79.81   15.74   16.91   31.98
12:55    8.30   11.72    73.8     0.9   125.4

12:56   33.99   80.45   15.43   16.71   32.66
12:56    7.91   11.89    71.9     0.9   129.0
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12:57   33.15   81.37   15.54   16.66   33.10
12:57    7.71   12.13    72.3     0.8   131.3

12:58   32.99   77.81   15.38   17.22   32.10
12:58    7.67   11.21    72.2     0.9   126.0

12:59   35.83   76.24   17.11   17.84   30.44
12:59    8.37   10.81    82.7     1.0   117.3

13:00   38.02   75.72   18.53   18.77   27.92
13:00    8.90   10.68    91.4     1.1   104.1

13:01   38.10   78.66   17.47   18.38   25.74
13:01    8.92   11.42    84.3     1.1    92.6

13:02   36.41   78.23   17.90   17.97   27.83
13:02    8.51   11.31    87.0     1.0   103.6

13:03   35.32   80.84   17.10   17.50   30.34
13:03    8.24   11.99    81.6     1.0   116.8

13:04   33.87   78.26   16.27   17.80   29.66
13:04    7.89   11.32    77.3     1.0   113.2

13:05   35.66   78.21   17.83   17.34   29.58
13:05    8.32   11.31    86.5     0.9   112.8

13:06   36.12   80.00   17.58   17.32   30.21
13:06    8.44   11.77    84.6     0.9   116.1

13:07   34.42   80.80   16.50   16.95   31.27
13:07    8.02   11.98    78.1     0.9   121.7

13:08   33.17   79.12   16.21   17.18   32.05
13:08    7.71   11.54    76.8     0.9   125.7

13:09   34.75   78.39   16.45   17.66   28.83
13:09    8.10   11.35    78.3     1.0   108.8

13:10   35.42   79.12   15.88   16.83   28.23
13:10    8.27   11.54    74.8     0.9   105.7

13:11   35.10   78.43   15.95   16.80   28.96
13:11    8.19   11.36    75.4     0.9   109.6

13:12   34.77   79.24   16.02   16.40   30.17
13:12    8.11   11.57    75.6     0.8   115.9

13:13   35.22   76.41   15.82   17.37   28.33
13:13    8.22   10.85    75.1     0.9   106.2

13:14   38.63   72.46   18.82   17.37   26.55
13:14    9.05    9.87    94.0     0.9    96.9

13:15   41.35   74.61   20.39   17.21   26.63
13:15    9.72   10.40   102.9     0.9    97.3

13:16   42.87   49.18   17.15   20.14   23.94
13:16   10.09    5.05    88.3     1.3    83.2

13:17   54.69   74.94   11.86   19.68   20.03
13:17   12.98   10.48    52.3     1.3    62.7

13:18   42.96   76.05   18.06   17.72   22.79
13:18   10.11   10.76    88.4     1.0    77.2

13:19   39.21   77.22   18.05   18.10   25.77
13:19    9.19   11.05    88.1     1.0    92.8

13:20   37.73   77.57   18.92   19.16   27.88
13:20    8.83   11.14    93.2     1.2   103.9

13:21   36.45   79.98   18.26   19.24   28.15
13:21    8.52   11.77    88.6     1.2   105.3

13:22   33.04   83.11   16.87   19.24   29.91
13:22    7.68   12.60    79.7     1.2   114.5

13:23   29.42   84.48   15.58   18.63   31.50
13:23    6.80   12.98    71.9     1.1   122.9

13:24   27.15   85.84   14.62   17.79   34.68
13:24    6.24   13.35    66.1     1.0   139.6

13:25   25.88   83.79   13.11   17.79   35.45
13:25    5.93   12.79    58.0     1.0   143.6

13:26   28.35   80.68   13.68   17.53   34.10
13:26    6.53   11.95    61.8     1.0   136.5

13:27   31.87   79.33   15.25   17.75   33.08
13:27    7.40   11.60    71.1     1.0   131.2

13:28   33.38   79.27   14.91   17.82   31.39
13:28    7.76   11.58    69.2     1.0   122.3

13:29   35.05   76.62   16.06   17.58   31.19
13:29    8.17   10.90    76.4     1.0   121.2

13:30   36.96   75.39   15.92   17.95   31.00
13:30    8.64   10.59    75.9     1.0   120.3

13:31   38.56   75.96   15.80   17.87   30.37
13:31    9.03   10.74    75.0     1.0   116.9

13:32   39.20   73.26   16.53   18.04   30.54
13:32    9.19   10.07    79.9     1.0   117.8

13:33   41.33   72.68   18.25   17.55   29.23
13:33    9.71    9.93    90.4     1.0   110.9

13:34   41.87   72.88   17.88   17.64   28.55
13:34    9.84    9.98    88.1     1.0   107.4

13:35   41.99   73.41   18.25   17.68   29.06
13:35    9.87   10.11    90.2     1.0   110.1

13:36   41.00   75.40   17.89   17.34   29.32
13:36    9.63   10.60    87.6     0.9   111.5

13:37   38.92   78.73   15.87   17.63   30.00
13:37    9.12   11.44    74.8     1.0   115.0

13:38   34.72   81.69   14.19   17.70   32.22
13:38    8.09   12.22    64.5     1.0   126.7

13:39   32.23   80.28   13.86   17.43   31.99
13:39    7.49   11.85    62.9     1.0   125.5

13:40   32.69   80.17   14.38   17.68   31.60
13:40    7.60   11.82    65.9     1.0   123.4

13:41   33.22   80.54   14.83   17.71   31.27
13:41    7.73   11.91    68.4     1.0   121.7

13:42   32.54   81.44   14.70   17.33   32.95
13:42    7.56   12.15    67.5     0.9   130.5

13:43   31.43   81.41   14.07   17.84   33.44
13:43    7.29   12.14    63.9     1.0   133.1

13:44   31.72   81.70   14.13   18.64   32.48
13:44    7.36   12.22    64.2     1.1   128.0

13:45   31.47   79.80   15.21   17.96   31.95
13:45    7.30   11.72    70.8     1.0   125.3

13:46   33.38   78.63   14.51   17.94   30.52
13:46    7.77   11.41    67.0     1.0   117.8

13:47   35.81   75.42   15.40   17.94   28.88
13:47    8.36   10.60    72.8     1.0   109.1

13:48   38.71   73.14   16.68   17.60   29.08
13:48    9.07   10.04    80.9     1.0   110.2

13:49   41.54   72.41   18.46   18.53   28.18
13:49    9.76    9.86    91.7     1.1   105.5

13:50   41.80   72.16   18.92   18.63   27.12
13:50    9.83    9.80    94.6     1.1    99.9

13:51   43.28   71.18   20.68   18.71   26.43
13:51   10.19    9.57   105.7     1.1    96.2
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13:52   42.66   74.46   18.92   18.69   26.07
13:52   10.04   10.36    94.0     1.1    94.4

13:53   40.18   75.12   17.46   19.06   25.54
13:53    9.43   10.53    85.1     1.2    91.6

13:54   38.89   80.27   18.33   18.35   26.95
13:54    9.11   11.84    89.0     1.1    99.0

13:55   33.31   80.56   15.50   18.53   29.89
13:55    7.75   11.92    72.3     1.1   114.4

13:56   33.14   80.82   15.57   18.57   28.40
13:56    7.71   11.99    72.6     1.1   106.6

13:57   31.99   80.99   15.86   17.80   28.60
13:57    7.43   12.03    74.3     1.0   107.6

13:58   33.11   79.46   15.43   17.67   27.11
13:58    7.70   11.63    72.1     1.0    99.8

13:59   33.71   78.91   15.37   17.92   27.38
13:59    7.85   11.49    71.9     1.0   101.2

14:00   35.29   77.56   16.17   17.63   26.40
14:00    8.23   11.14    76.9     1.0    96.1

14:01   35.99   77.32   15.56   17.82   25.77
14:01    8.40   11.08    73.3     1.0    92.8

14:02   37.21   75.08   17.02   18.14   24.26
14:02    8.70   10.52    82.4     1.0    84.9

14:03   39.47   75.29   19.73   18.54   23.96
14:03    9.25   10.57    98.7     1.1    83.3

14:04   37.96   79.13   18.61   17.37   24.72
14:04    8.89   11.54    90.9     0.9    87.3

14:05   34.49   76.66   16.07   17.95   26.06
14:05    8.04   10.91    76.5     1.0    94.3

14:06   39.94   68.94   21.70   18.90   24.16
14:06    9.37    9.05   112.6     1.1    84.4

14:07   43.14   73.56   21.70   18.27   23.76
14:07   10.15   10.14   111.3     1.1    82.2

14:08   41.21   77.15   19.58   18.78   25.69
14:08    9.68   11.04    97.3     1.1    92.4

14:09   35.36   83.19   17.68   21.10   31.08
14:09    8.25   12.62    84.4     1.4   120.7

14:10   29.52   84.29   17.17   19.35   33.79
14:10    6.82   12.92    81.1     1.2   134.9

14:11   28.35   80.62   16.00   19.42   34.33
14:11    6.54   11.94    75.2     1.2   137.7

14:12   33.14   75.46   18.39   19.05   31.70
14:12    7.71   10.61    90.6     1.2   123.9

14:13   38.01   74.85   19.25   19.12   31.06
14:13    8.90   10.46    95.9     1.2   120.6

14:14   38.83   77.39   18.93   18.69   32.59
14:14    9.10   11.10    93.3     1.1   128.6

14:15   36.37   78.58   16.88   17.63   31.70
14:15    8.50   11.40    80.8     1.0   123.9

14:16   34.64   80.90   16.04   17.64   31.45
14:16    8.08   12.01    75.3     1.0   122.6

14:17   32.61   79.23   15.85   18.14   29.98
14:17    7.58   11.57    74.6     1.0   114.9

14:18   34.69   76.75   15.66   17.55   27.66
14:18    8.09   10.93    74.0     1.0   102.7

14:19   37.38   73.20   16.74   17.65   26.46
14:19    8.74   10.05    81.2     1.0    96.4

14:20   41.30   72.32   20.82   17.55   24.09
14:20    9.70    9.84   106.2     1.0    84.0

14:21   42.52   72.86   20.92   17.67   23.45
14:21   10.00    9.97   106.7     1.0    80.6

14:22   42.10   75.77   19.90   18.04   24.39
14:22    9.90   10.69    99.6     1.0    85.5

14:23   38.16   82.43   18.04   19.30   26.63
14:23    8.94   12.42    86.7     1.2    97.3

14:24   31.52   85.18   16.85   21.91   28.56
14:24    7.31   13.17    79.0     1.6   107.5

14:25   27.47   85.25   17.08   19.89   30.40
14:25    6.32   13.19    80.3     1.3   117.1

14:26   27.90   81.66   19.01   19.50   28.14
14:26    6.42   12.21    92.6     1.2   105.2

14:27   30.26   83.18   17.90   19.80   27.38
14:27    7.00   12.62    85.7     1.3   101.2

14:28   28.94   83.21   17.27   17.82   26.65
14:28    6.68   12.63    82.0     1.0    97.4

14:29   30.22   79.85   16.12   18.57   24.39
14:29    6.99   11.73    76.1     1.1    85.5

14:30   33.44   81.10   17.59   18.07   23.50
14:30    7.78   12.06    84.4     1.0    80.9

14:31   32.09   83.15   15.97   18.05   24.34
14:31    7.45   12.61    74.4     1.0    85.3

14:32   30.20   82.23   14.42   19.02   25.70
14:32    6.99   12.36    65.7     1.2    92.4

14:33   31.34   81.60   15.47   19.55   26.16
14:33    7.27   12.20    71.9     1.2    94.8

14:34   31.57   81.41   15.20   19.87   27.36
14:34    7.32   12.15    70.4     1.3   101.1

14:35   31.44   82.49   15.76   20.15   28.24
14:35    7.29   12.43    73.4     1.3   105.8

14:36   30.91   81.58   16.24   19.53   28.57
14:36    7.16   12.19    76.4     1.2   107.5

14:37   31.96   80.16   16.50   19.23   27.98
14:37    7.42   11.81    78.2     1.2   104.4

14:38   33.85   76.70   16.61   19.85   27.00
14:38    7.88   10.92    79.7     1.3    99.3

14:39   37.23   76.64   18.91   19.73   26.55
14:39    8.71   10.91    93.4     1.3    96.9

14:40   37.62   79.10   18.51   18.99   26.90
14:40    8.80   11.54    90.4     1.2    98.7

14:41   35.33   78.93   15.53   19.34   26.94
14:41    8.24   11.49    72.8     1.2    98.9

14:42   35.40   79.67   16.69   18.64   25.98
14:42    8.26   11.69    79.4     1.1    93.9

14:43   34.93   78.09   16.34   18.48   26.67
14:43    8.15   11.28    77.8     1.1    97.5

14:44   36.41   74.09   17.16   19.58   25.35
14:44    8.51   10.27    83.5     1.2    90.6

14:45   40.40   73.23   21.21   19.49   23.53
14:45    9.48   10.06   108.4     1.2    81.0

14:46   41.17   75.67   20.96   19.33   23.31
```

```
14:46     9.67   10.66   106.1     1.2    79.9
14:47    39.49   76.88   19.14   19.22   22.86
14:47     9.26   10.97    94.7     1.2    77.5
14:48    37.89   79.96   19.22   18.61   23.27
14:48     8.87   11.76    94.3     1.1    79.7
14:49    34.24   82.72   16.58   18.49   23.84
14:49     7.98   12.50    78.1     1.1    82.7
14:50    31.22   83.10   15.20   18.30   24.45
14:50     7.24   12.60    70.0     1.1    85.9
14:51    30.84   80.53   16.02   18.23   24.40
14:51     7.14   11.91    75.3     1.1    85.6
14:52    32.70   80.19   16.49   18.28   23.47
14:52     7.60   11.82    78.1     1.1    80.7
14:53    33.22   82.03   16.10   18.61   23.58
14:53     7.73   12.31    75.4     1.1    81.3
14:54    31.98   80.77   15.86   19.57   23.50
14:54     7.42   11.98    74.4     1.2    80.9
14:55    38.63   61.23   13.75   18.51   19.74
14:55     9.05    7.35    65.4     1.1    61.1
14:56    42.18   82.57   11.95   19.08   21.16
14:56     9.92   12.46    51.6     1.2    68.6
14:57    33.88   81.00   15.68   19.46   22.09
14:57     7.89   12.03    73.3     1.2    73.5
14:58    33.40   78.85   15.10   19.61   22.46
14:58     7.77   11.47    70.3     1.2    75.4
14:59    35.42   75.58   16.31   19.54   22.85
14:59     8.26   10.64    78.1     1.2    77.4
15:00    38.67   72.40   18.29   19.27   21.74
15:00     9.06    9.86    90.7     1.2    71.6
15:01    42.05   72.02   20.04   18.78   20.75
15:01     9.89    9.77   101.5     1.1    66.4
15:02    43.20   70.43   19.48   19.48   20.03
15:02    10.17    9.39    98.5     1.2    62.6
15:03    44.48   70.91   21.53   18.94   19.65
15:03    10.48    9.51   111.0     1.2    60.7
15:04    44.49   72.20   20.05   18.58   19.33
15:04    10.48    9.81   101.5     1.1    59.0
15:05    43.35   74.85   18.90   18.64   19.15
15:05    10.20   10.46    93.8     1.1    58.0
15:06    40.45   78.99   17.25   19.18   19.68
15:06     9.49   11.51    82.9     1.2    60.8
15:07    36.47   79.21   15.79   18.23   20.48
15:07     8.52   11.57    74.3     1.1    65.0
15:08    35.52   79.38   15.35   19.45   20.37
15:08     8.29   11.61    71.6     1.2    64.4
15:09    34.78   80.92   15.90   18.88   20.07
15:09     8.11   12.01    74.5     1.1    62.8
15:10    33.46   78.71   14.90   18.39   19.86
15:10     7.79   11.43    69.2     1.1    61.8
15:11    35.46   76.72   15.20   18.50   19.01
15:11     8.28   10.93    71.4     1.1    57.3
15:12    37.60   75.55   16.65   18.50   18.45
15:12     8.80   10.63    80.1     1.1    54.4
15:13    38.90   75.95   16.99   18.36   18.27
```

```
15:14    38.93   75.80   16.22   18.29   18.35
15:14     9.12   10.69    77.6     1.1    53.9
15:15    39.14   75.13   15.67   18.18   16.23
15:15     9.17   10.53    74.4     1.1    53.2
15:16    40.11   73.00   17.06   18.29   17.78
15:16     9.41   10.01    83.2     1.1    50.9
15:17    41.92   73.58   18.44   18.93   17.47
15:17     9.86   10.15    91.4     1.2    49.2
15:18    41.48   76.24   18.26   18.35   17.52
15:18     9.75   10.80    89.6     1.1    49.5
15:19    38.99   78.94   16.47   17.29   18.08
15:19     9.14   11.50    78.3     0.9    52.4
15:20    36.37   80.52   15.12   18.05   18.72
15:20     8.50   11.91    70.1     1.0    55.8
15:21    34.33   82.27   14.44   16.85   17.77
15:21     8.00   12.37    65.8     0.9    50.8
15:22    32.27   79.79   14.58   16.71   19.03
15:22     7.50   11.72    67.1     0.9    57.4
15:23    33.15   78.83   13.81   17.34   18.57
15:23     7.71   11.47    62.8     0.9    55.0
15:24    34.66   66.71   13.15   21.29   17.39
15:24     8.08    8.54    61.0     1.5    48.8
15:25    46.66   38.32   30.56  103.68   14.29
15:25    11.02    3.33   180.5    12.5    32.5
15:26    64.18   13.43  100.63  104.25   11.34
15:26    15.30    0.67   833.1    12.5    17.0
15:27    78.16    6.62   62.90   90.68    9.54
15:27    18.72    0.25   450.1    10.7     7.6
15:28    83.41    5.18   35.81   90.90   10.46
15:28    20.01    0.18   225.5    10.8    12.4
15:29    85.20    4.45   25.65   82.54    9.83
15:29    20.45    0.15   151.2     9.6     9.1
15:30    85.85    3.99   19.86   78.53    9.97
15:30    20.60    0.13   111.1     9.1     9.9
15:31    86.20    3.77   16.45   72.64    9.87
15:31    20.69    0.12    88.2     8.3     9.3
15:32    86.36    3.61   14.56   66.33    9.77
15:32    20.73    0.11    75.8     7.5     8.8
15:33    86.43    3.37   13.37   64.21    9.67
15:33    20.75    0.10    68.1     7.2     8.3
15:34    86.53    3.92   12.46  101.30    9.55
15:34    20.77    0.13    62.2    12.1     7.6
15:35    85.69   10.55   13.99  123.89    9.48
15:35    20.57    0.48    71.8    15.2     7.2
15:36    83.11   11.25   15.35  123.87    9.40
15:36    19.93    0.52    80.7    15.2     6.8
15:37    82.13   11.37   14.39   84.80    9.30
15:37    19.70    0.53    74.4     9.9     6.3
15:38    81.84   11.79   11.24   60.03    9.22
15:38    19.62    0.56    54.1     6.6     5.9
15:39    81.62   12.01    8.77   58.36    9.18
15:39    19.57    0.57    38.5     6.4     5.7
15:40    81.42   11.99    8.11   55.67    9.34
15:40    19.52    0.57    34.5     6.1     6.5
```

```
15:41   81.37   12.16    7.47   51.88    9.26
15:41   19.51    0.58   30.4     5.6     6.1

15:42   81.31   12.03    7.17   65.63    9.17
15:42   19.49    0.58   28.6     7.4     5.6

15:43   81.88    4.75    6.90  112.23    9.09
15:43   19.63    0.16   27.0    13.6     5.2

15:44   84.68    2.84    6.43   60.93    9.06
15:44   20.37    0.08   24.2     6.8     5.0

17:45   35.44   77.65   19.57   17.68   14.17
17:45    8.27   11.16   97.1     1.0    31.9

17:46   36.91   75.36   19.98   18.67   13.73
17:46    8.63   10.59  100.2     1.1    29.6

17:47   40.14   72.08   23.85   19.15   13.16
17:47    9.42    9.79  125.2     1.2    26.6

17:48   43.20   72.67   27.55   18.56   12.83
17:48   10.17    9.92  148.6     1.1    24.9

17:49   43.18   73.27   26.33   19.62   12.85
17:49   10.16   10.07  140.5     1.2    24.9

17:50   43.11   74.21   27.94   18.46   12.60
17:50   10.15   10.30  150.5     1.1    23.6

17:51   41.83   75.96   25.95   18.37   12.74
17:51    9.83   10.74  137.0     1.1    24.4

17:52   40.31   75.05   22.86   19.25   12.77
17:52    9.46   10.51  118.0     1.2    24.6

17:53   40.44   76.87   24.67   18.77   12.75
17:53    9.49   10.96  128.7     1.1    24.4

17:54   38.31   81.32   22.53   18.18   13.28
17:54    8.97   12.12  113.9     1.1    27.2

17:55   34.22   80.37   18.82   18.65   13.41
17:55    7.97   11.87   91.9     1.1    27.9

17:56   34.91   77.59   21.40   18.51   12.95
17:56    8.14   11.15  108.2     1.1    25.5

17:57   37.34   75.19   23.32   19.31   12.48
17:57    8.74   10.54  120.8     1.2    23.0

17:58   39.54   75.77   25.98   20.20   12.26
17:58    9.27   10.69  137.3     1.3    21.8

17:59   42.09   59.24   32.15   41.91   11.19
17:59    9.90    6.94  184.7     4.2    16.2

18:00   53.99   55.34   85.55   39.12    9.59
18:00   12.81    6.18  631.3     3.8     7.9

18:01   52.98   79.34   86.86   22.72   11.63
18:01   12.56   11.60  607.0     1.7    18.5

18:02   36.57   83.69   30.41   18.90   13.51
18:02    8.55   12.76  161.9     1.1    28.4

18:03   31.42   78.52   17.51   18.47   14.04
18:03    7.29   11.39   84.5     1.1    31.2

18:04   34.51   80.11   18.57   18.01   14.77
18:04    8.04   11.80   90.4     1.0    35.0

18:05   33.18   79.72   16.54   17.53   15.61
18:05    7.72   11.70   78.5     1.0    39.4

18:06   33.98   79.57   16.67   14.80   14.83
18:06    7.91   11.66   79.4     0.6    35.3

18:07   34.18   79.16   17.24   18.44   15.39
18:07    7.96   11.55   82.8     1.1    38.3

18:08   35.21   77.39   18.76   17.94   15.08
```

```
18:08    8.24   11.08   92.3     1.0    36.7

18:09   36.41   77.61   18.64   17.67   14.80
18:09    8.51   11.15   91.5     1.0    35.2

18:10   37.13   76.43   18.15   18.25   14.31
18:10    8.68   10.85   88.9     1.1    32.6

18:11   38.00   75.65   20.23   17.83   14.02
18:11    8.90   10.66  101.6     1.0    31.1

18:12   38.69   77.42   20.03   18.03   13.92
18:12    9.07   11.10   99.9     1.0    30.6

18:13   35.99   80.10   19.06   17.38   14.24
18:13    8.40   11.80   93.4     0.9    32.2

18:14   34.28   78.10   17.70   17.60   14.13
18:14    7.99   11.28   85.8     1.0    31.7

18:15   35.12   80.45   18.35   17.72   14.26
18:15    8.19   11.89   89.1     1.0    32.4

18:16   31.88   81.92   16.19   18.08   14.58
18:16    7.40   12.28   76.0     1.0    34.0

18:17   30.03   82.50   14.90   17.45   14.87
18:17    6.94   12.44   68.4     1.0    35.6

18:18   30.30   80.51   14.50   17.46   14.71
18:18    7.01   11.91   66.5     1.0    34.7

18:19   32.55   77.65   14.31   18.14   14.37
18:19    7.56   11.16   66.0     1.0    32.9

18:20   36.26   76.58   16.89   18.07   13.95
18:20    8.47   10.89   81.4     1.0    30.7

18:21   38.10   67.42   17.65   21.71   13.32
18:21    8.92    8.70   88.0     1.5    27.4

18:22   48.55   66.64   36.56   21.31   12.35
18:22   11.48    8.52  211.9     1.5    22.3

18:23   43.16   79.78   34.07   18.59   13.22
18:23   10.16   11.71  187.6     1.1    26.9

18:24   33.75   81.53   17.97   18.08   13.90
18:24    7.86   12.18   86.5     1.0    30.4

18:25   29.31   84.20   15.07   17.84   14.52
18:25    6.77   12.90   69.0     1.0    33.7

18:26   29.39   76.29   14.76   18.10   14.30
18:26    6.79   11.33   68.5     1.0    32.6

18:27   35.59   75.80   17.61   18.84   13.70
18:27    8.31   10.70   85.8     1.1    29.4

18:28   37.21   76.07   21.03   20.25   13.52
18:28    8.70   10.76  106.4     1.3    28.5

18:29   39.36   68.86   25.98   23.21   12.99
18:29    9.23    9.03  139.9     1.7    25.7

18:30   46.26   70.89   44.89   21.24   12.35
18:30   10.92    9.50  268.7     1.5    22.3

18:31   40.72   76.76   33.18   18.61   12.69
18:31    9.56   10.94  183.6     1.1    24.1

18:32   32.91   81.39   17.26   17.49   13.18
18:32    7.65   12.14   82.4     1.0    26.7

18:33   28.79   80.18   13.20   16.34   13.40
18:33    6.64   11.82   59.1     0.8    27.8

18:34   31.81   73.96   11.20   16.34   12.91
18:34    7.38   10.24   48.6     0.8    25.2

18:35   38.41   68.20   12.00   17.25   12.17
```

Resume sampling 1

```
18:35    9.00    8.88    54.1     0.9    21.4
18:36   48.38   49.63   17.53   23.73   10.92
18:36   11.44    5.13    90.7     1.8    14.8
18:37   59.81   40.07   41.20   58.48   10.10
18:37   14.23    3.59   257.9     6.4    10.5
18:38   64.32   46.57   83.06   33.89    9.70
18:38   15.34    4.61   617.1     3.1     8.4
18:39   58.09   53.00   62.67   26.43    9.66
18:39   13.81    5.74   423.4     2.2     8.2
18:40   55.89   52.95   41.92   29.45    9.61
18:40   13.27    5.73   257.5     2.6     7.9
18:41   57.19   49.44   45.03   34.67    9.52
18:41   13.59    5.09   282.9     3.3     7.5
18:42   59.64   43.35   57.37   57.65    9.40
18:42   14.19    4.09   385.6     6.3     6.9
18:43   64.78   34.13   81.86  104.38    9.22
18:43   15.45    2.76   617.0    12.6     5.9
18:44   68.41   32.91  103.68  123.72    9.07
18:44   16.34    2.60   851.5    15.1     5.1
18:45   69.30   31.37  110.63  122.98    9.00
18:45   16.56    2.41   934.4    15.0     4.7
18:46   70.27   31.02  103.43  123.71    8.93
18:46   16.79    2.37   850.6    15.1     4.4
18:47   70.08   30.97  103.91  123.72    8.87
18:47   16.75    2.36   856.2    15.1     4.1
18:48   70.06   31.24  100.33  123.16    8.85
18:48   16.74    2.39   815.3    15.1     4.0
18:49   70.37   30.28   93.01  123.61    8.81
18:49   16.82    2.28   735.8    15.1     3.7
18:50   70.61   25.21   92.17  122.69    8.81
18:50   16.88    1.71   731.0    15.0     3.7
19:39    1.95    1.40    1.75   24.60   24.25
19:39    0.08    0.02    -4.3     1.9    84.8


19:40            2.18    1.88    1.26   16.14   24.30
19:41            2.16    1.96    1.12   11.87   24.33
19:41FINAL SPAN
 4  SO2  24.33   413.00
19:43            1.55    1.84    1.24   11.24   18.39
19:44            1.62    1.92    1.34   11.14   14.63
19:44FINAL ZERO
 3  THC  11.14
19:45            1.70    2.00    1.50   11.19   12.27
19:46            1.77    1.89    1.31   11.12   11.51
19:47            1.90    1.90    1.29   73.32   10.91
19:48            1.95    1.86    1.35  103.03   10.54
19:48FINAL ZERO
 0   O2   1.95
 1  CO2   1.86
 2   CO   1.35
19:49            2.03    1.83    1.30  102.15   10.20
19:50            1.95   13.51    1.40  102.02   10.12
19:51           25.20   79.49   22.11  101.61   10.12
19:52           46.95   80.45   50.60  101.19    9.82
19:53           49.99   80.61   52.41  100.80    9.64
19:54           50.49   80.71   52.30  100.44    9.51
19:54FINAL SPAN
 3  THC 100.44     10.20
19:58           50.75   80.76   52.56  100.08    9.10
```

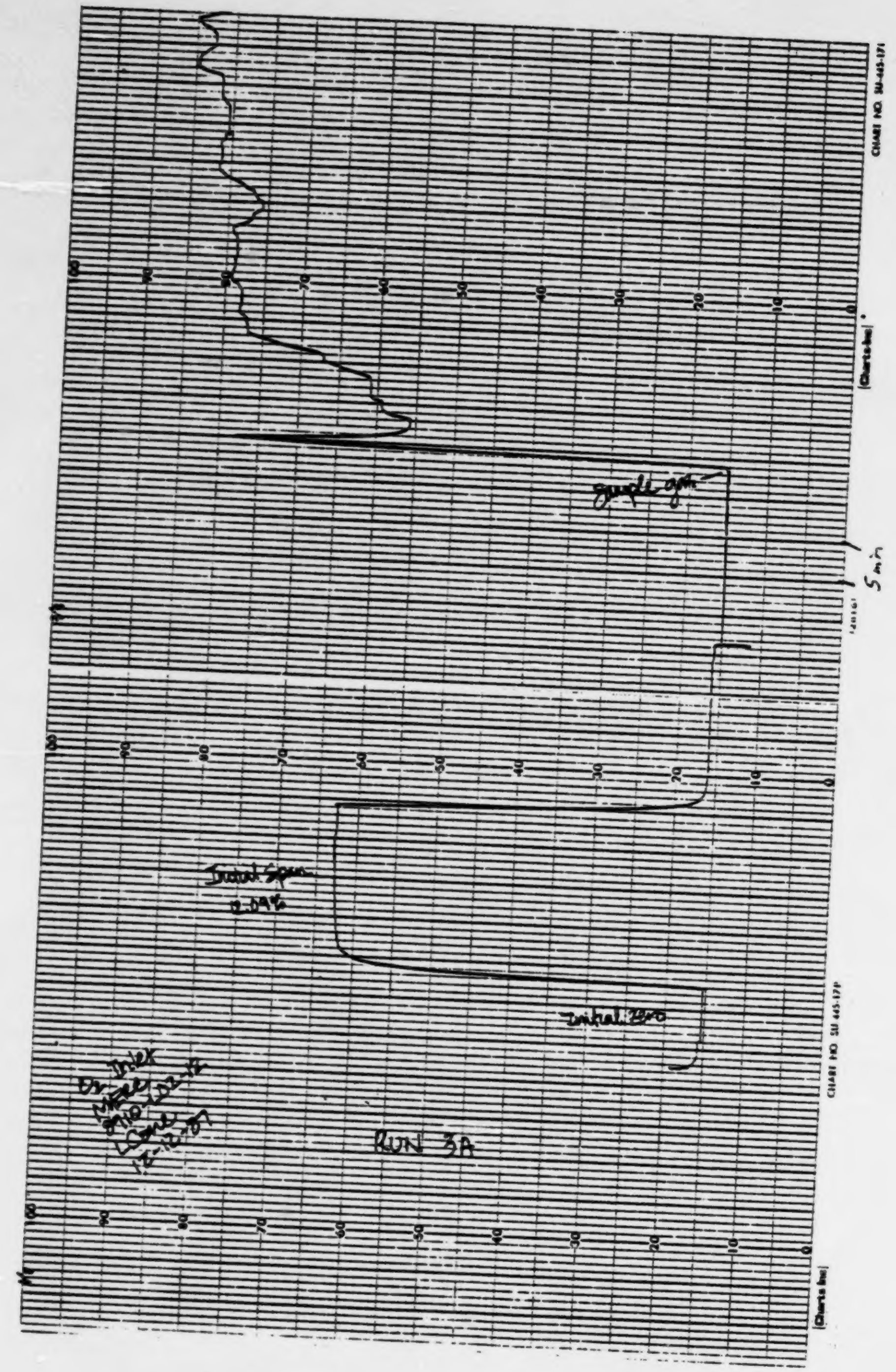
```
19:59          50.79  80.86  52.57 100.19    9.04
20:00          50.82  80.68  52.55 100.29    8.97
20:00FINAL SPAN
 0   O2  50.82     12.09
 1  CO2  80.68     12.00
 2   CO  52.55    338.00
20:01          50.87  80.80  52.59 100.49    8.90
20:02          50.88  80.91  52.63 100.61    8.87
20:02FINAL SPAN
 3  THC 100.61     10.20
20:12           5.78   2.56   1.83  11.00    8.45
20:13           3.13   2.47   1.84  11.05    8.43
20:14           2.28   2.33   1.96  11.03    8.39
20:15           2.11   2.16   1.92  11.03    8.37
20:15FINAL ZERO
 4  SO2   8.37
```

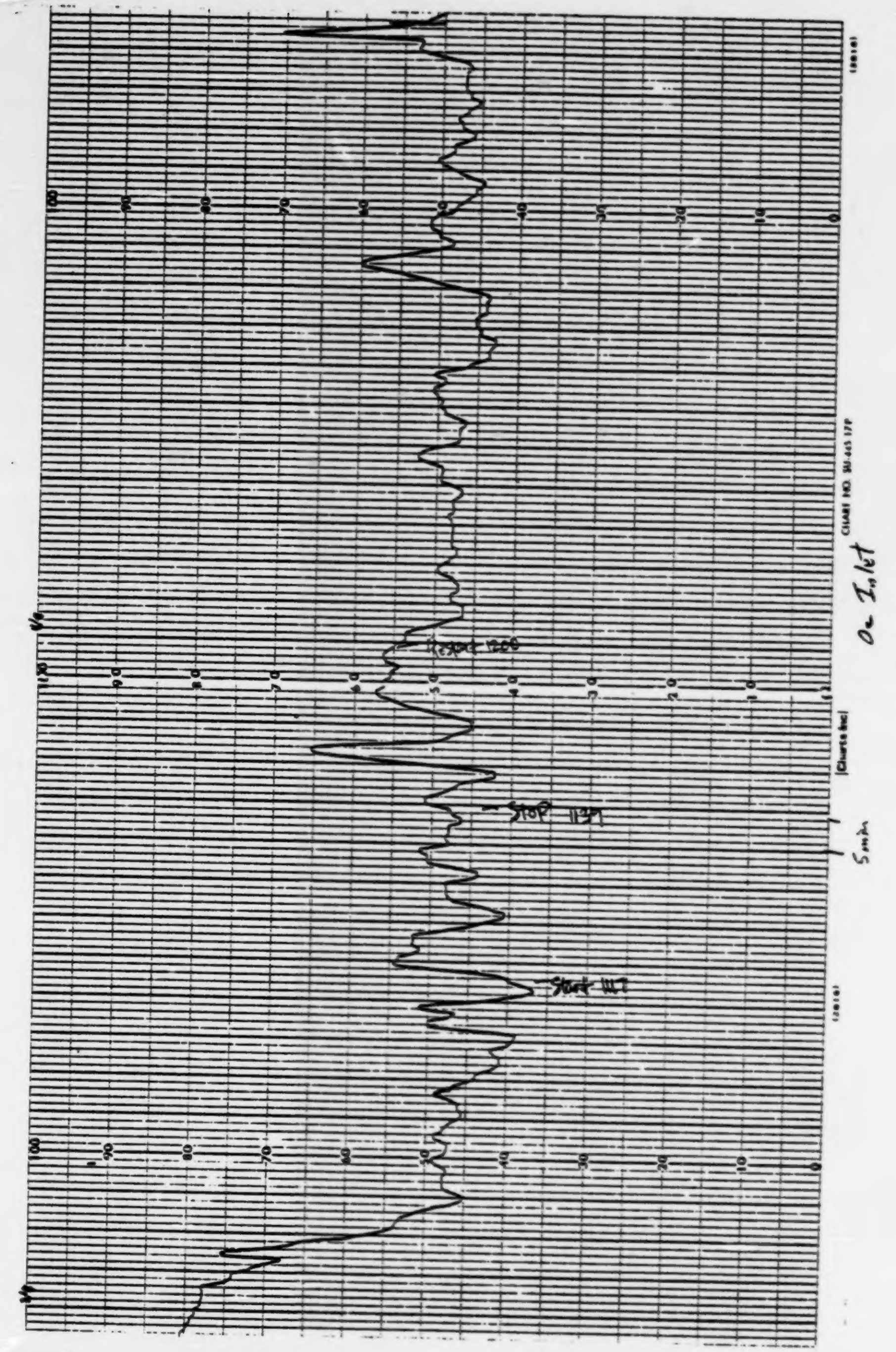
Final leak ck

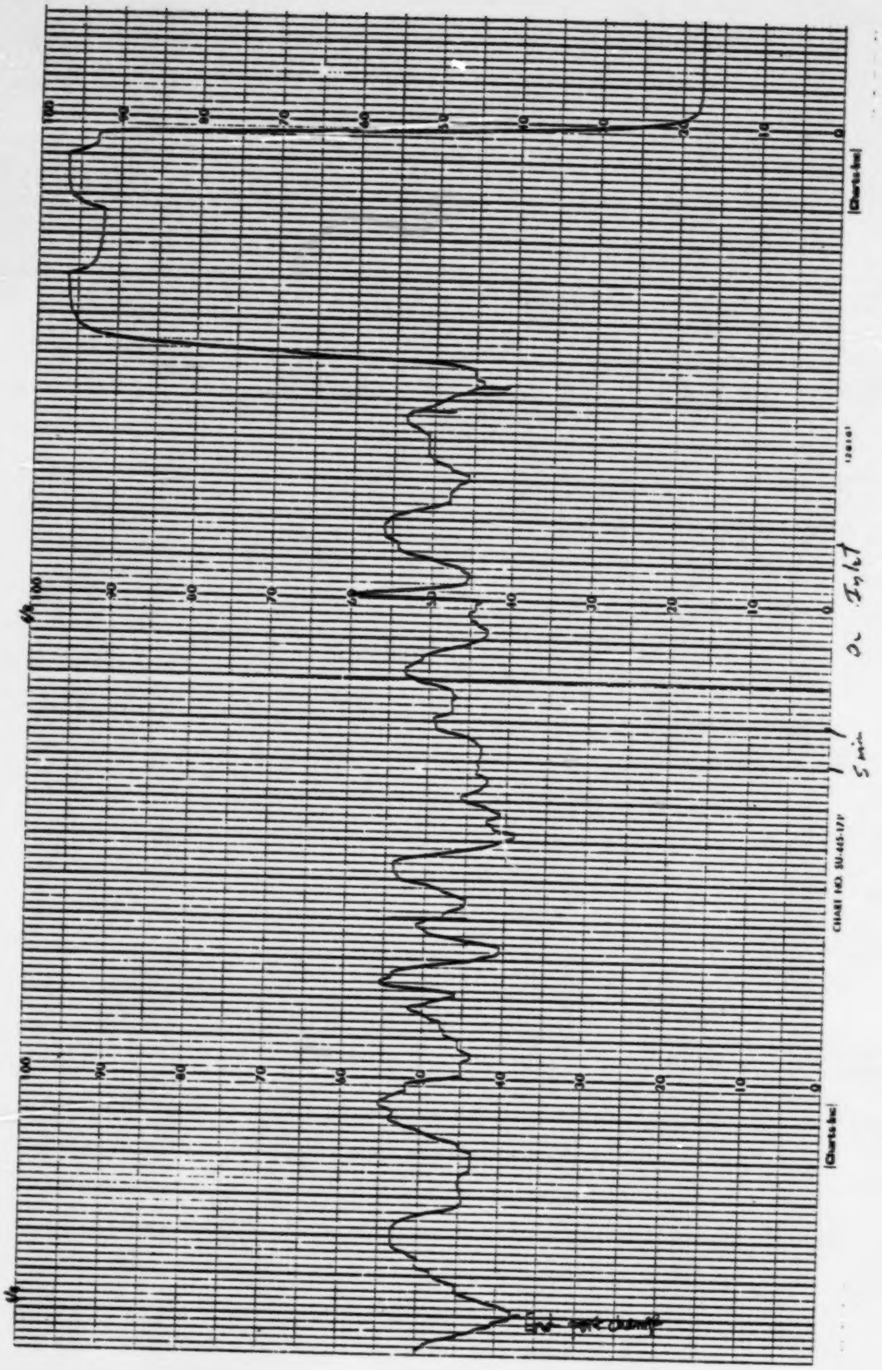
~~Pass~~

2"/min at 20"

1.5"/min


100
90
80
70
60
50
40
30
20
10
0
CHART NO. SU 445-17P
Sample gas
5 min
Initial Span
0.09%
Initial Zero
RUN 3A
Dr Inlet
12-12-87


100
90
80
70
60
50
40
30
20
10
0
Restart 1200
Stop 1137
Start 1117
5 min
O2 Inlet
Charts Inc


100
90
80
70
60
50
40
30
20
10
0
Charts Inc
CHART NO. SU-445-171
5 min
2 Inlet
End port change

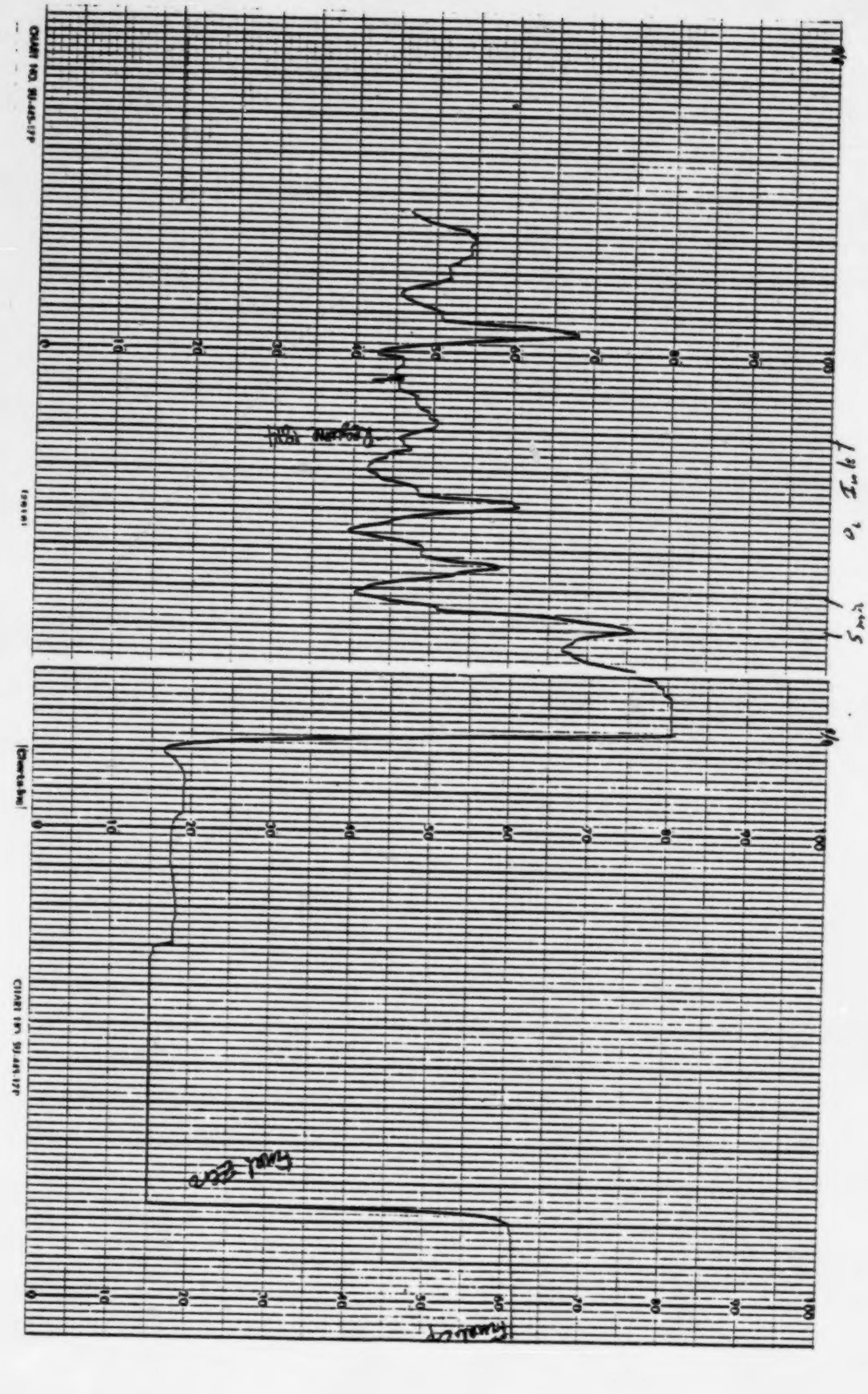
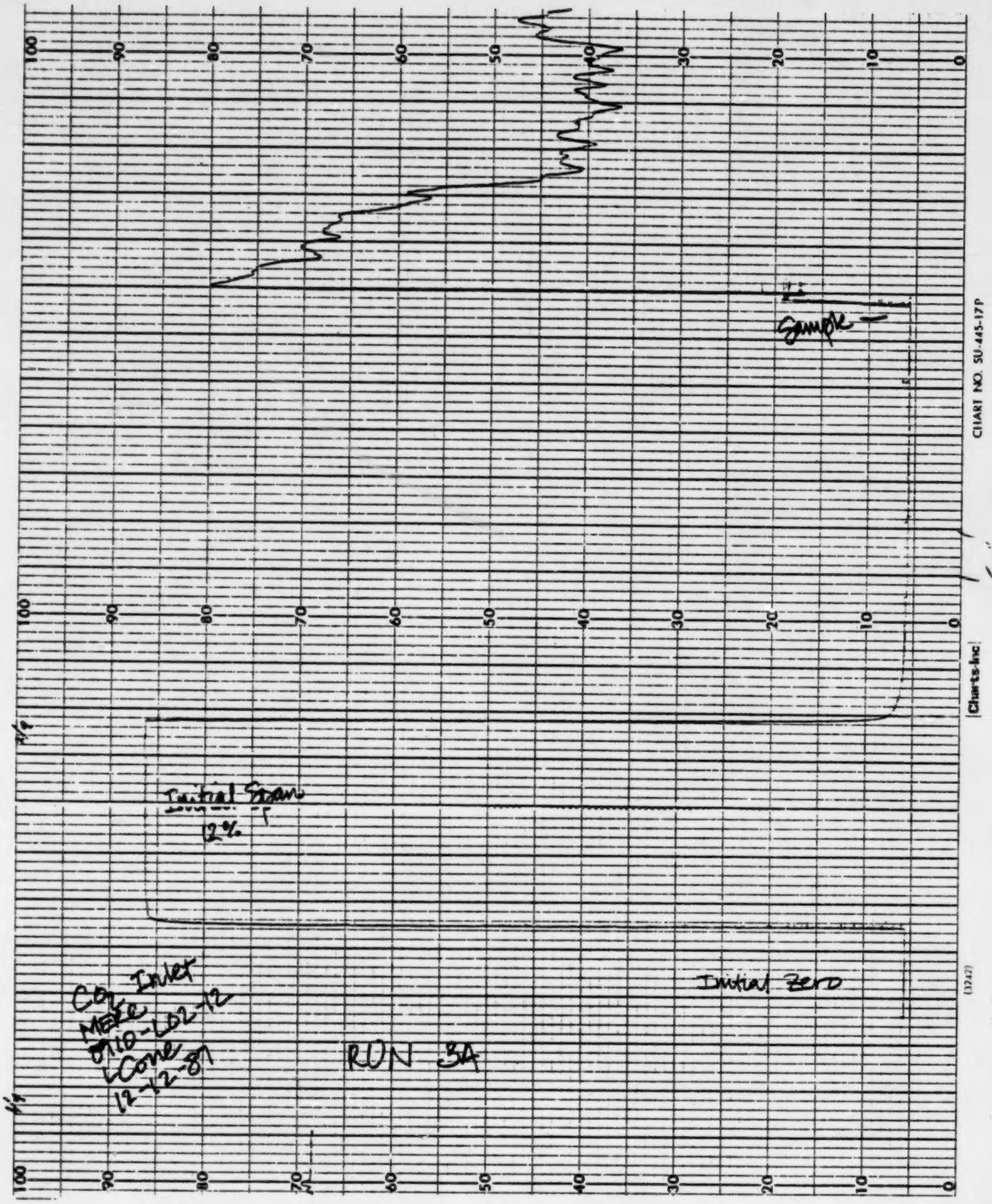
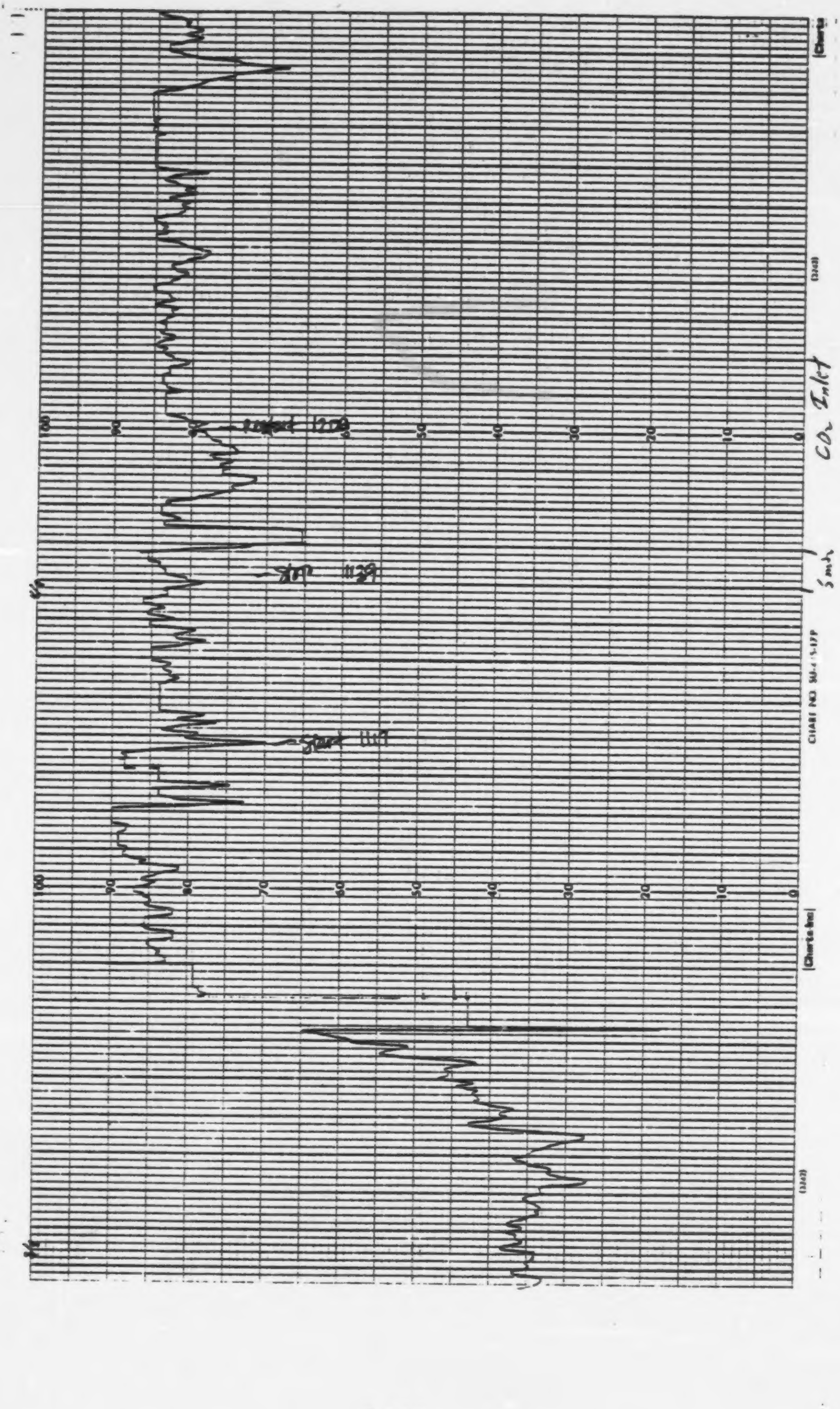
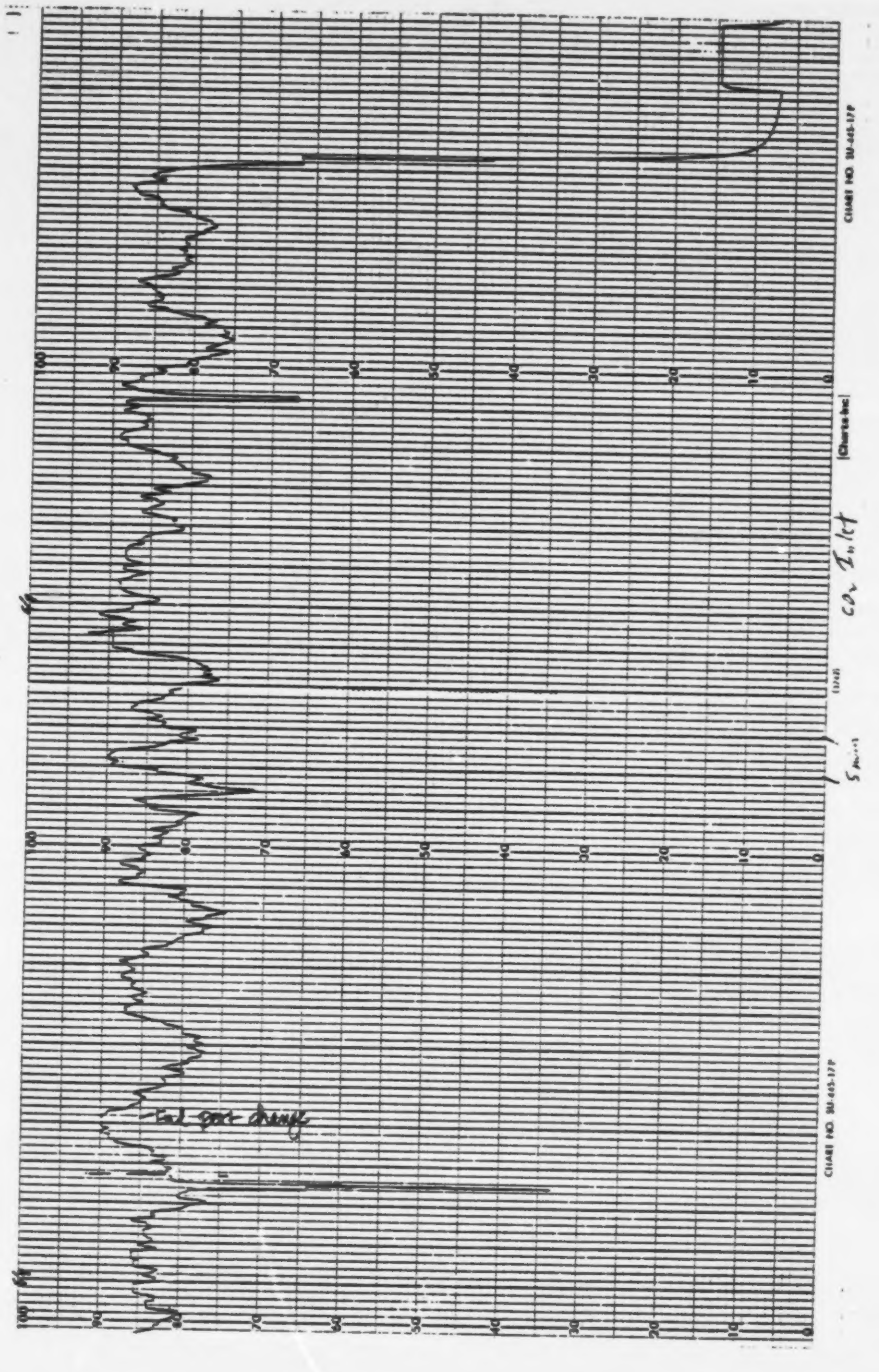


CHART NO. 90-445-17P
0
10
20
30
40
50
60
70
80
90
100
O2 Inlet
5 min
Final Zero

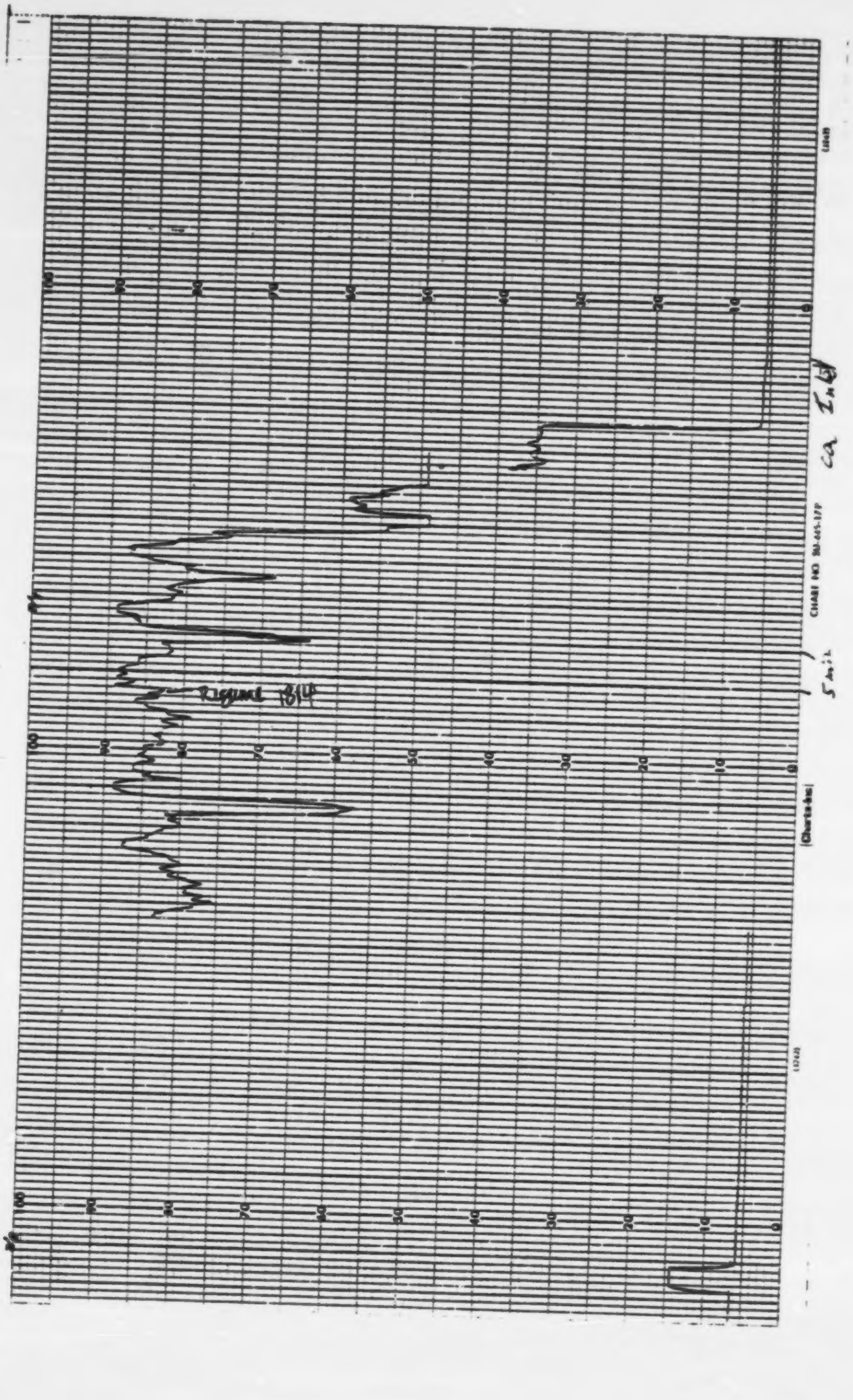

100
90
80
70
60
50
40
30
20
10
0
CHART NO. SU-445-17P
Charts-Inc
(3242)
Sample
5 min
Initial Span
12%
Initial Zero
CO2 Inlet
MEEC
0110-L02-12
L Cone
12-12-87
RUN 3A

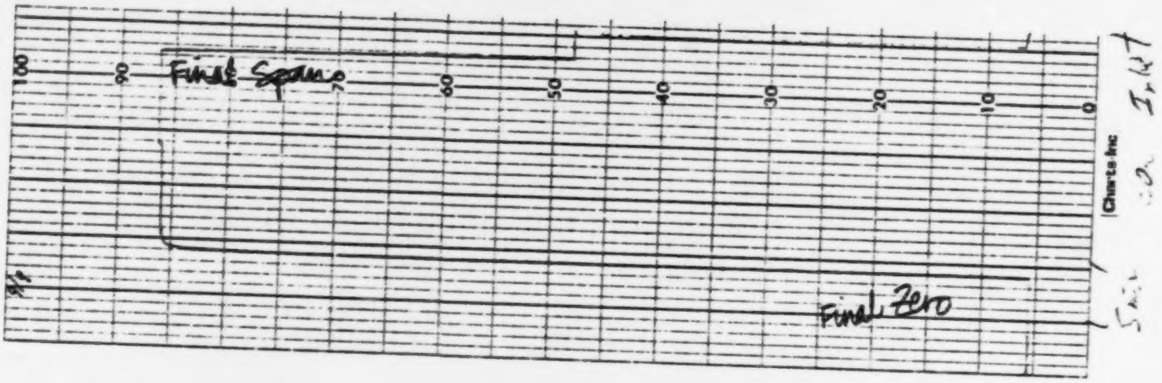


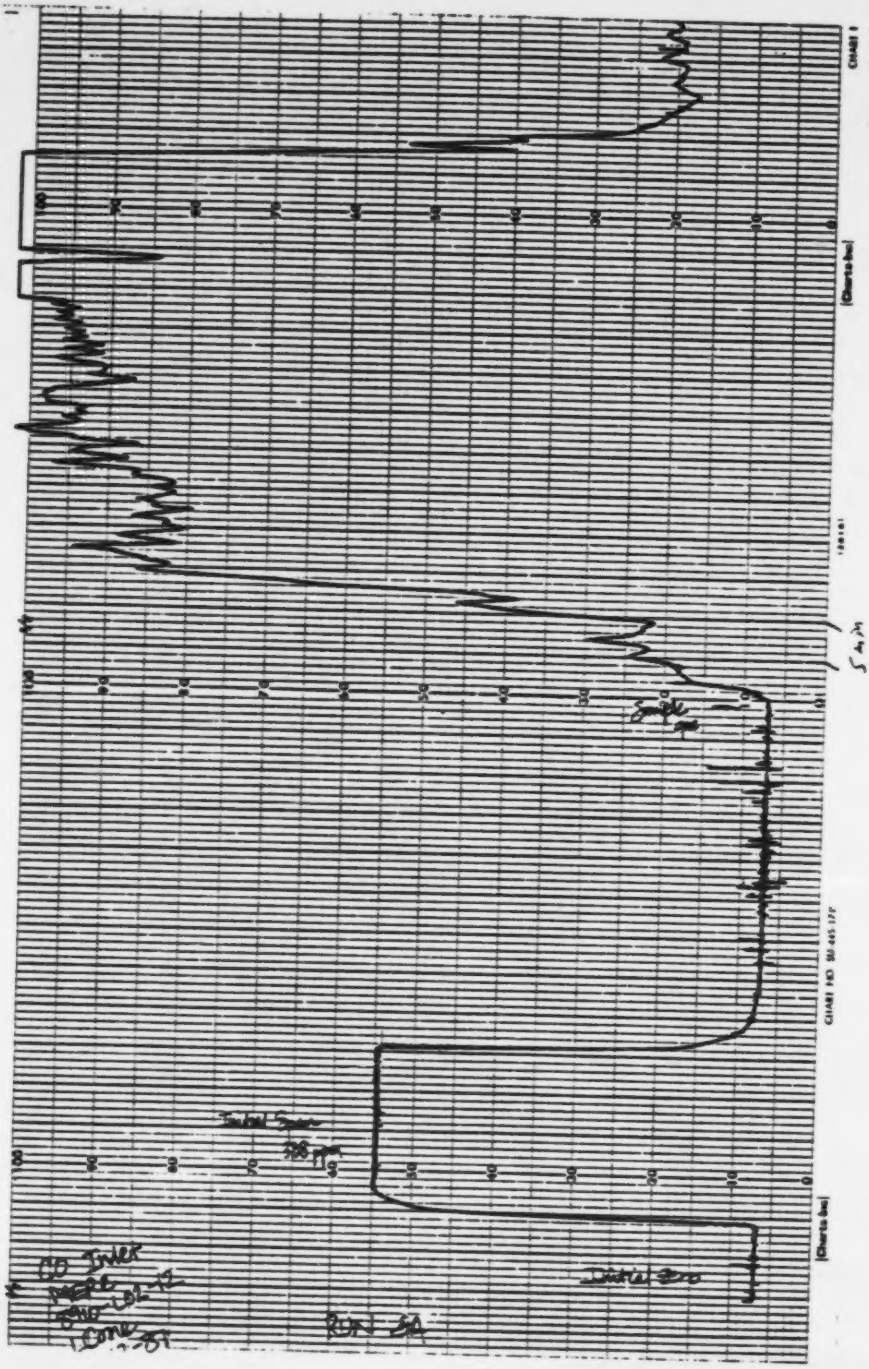
CO2 Inlet
Restart 1208
Stop 1139
Start 1117
5 min
100
90
80
70
60
50
40
30
20
10
0
CHART NO
Chart Inc

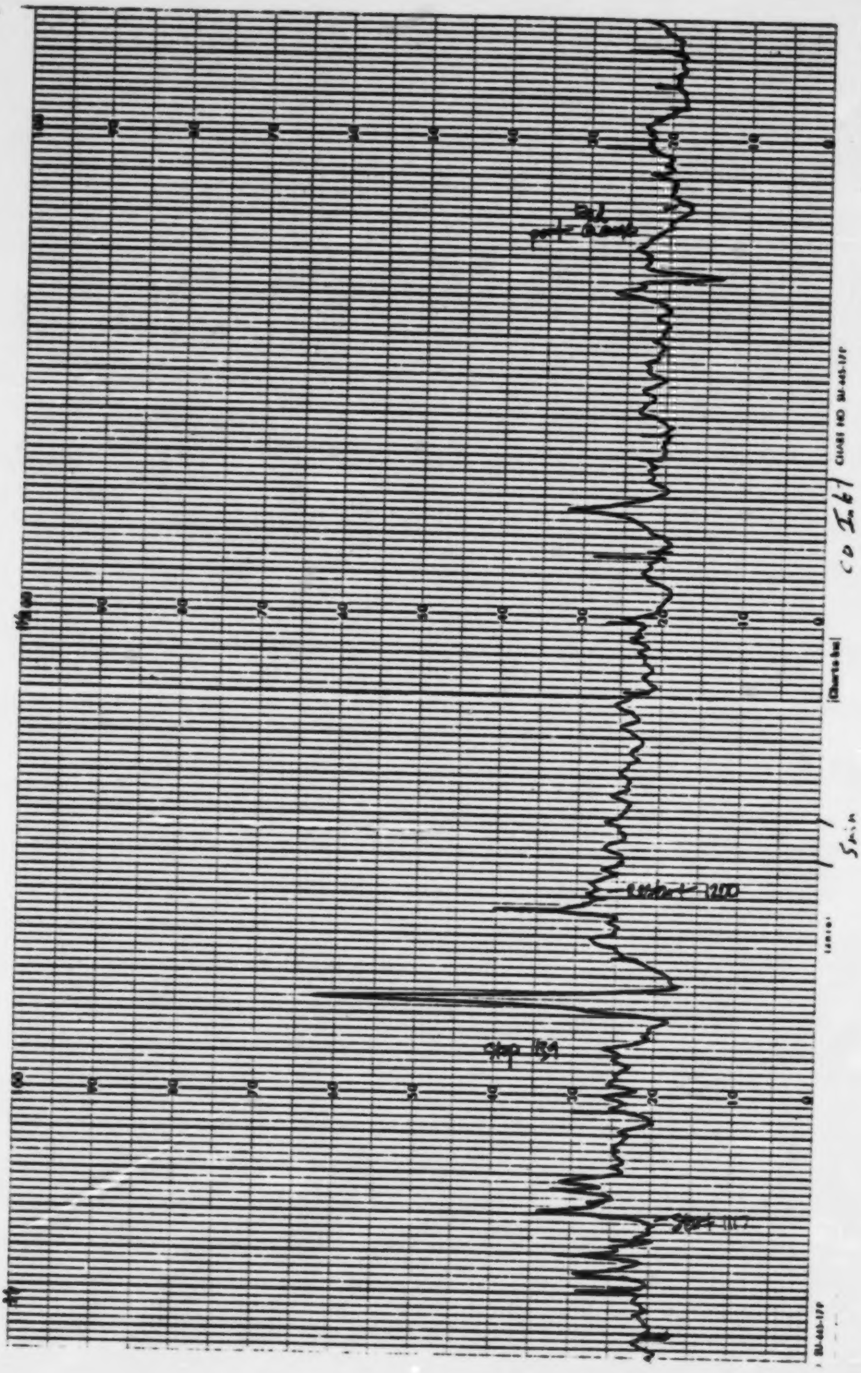


100
90
80
70
60
50
40
30
20
10
0
CHART NO. 3U-445-17P
Chart-Inc
CO2 Inlet
5 min
Cal port change

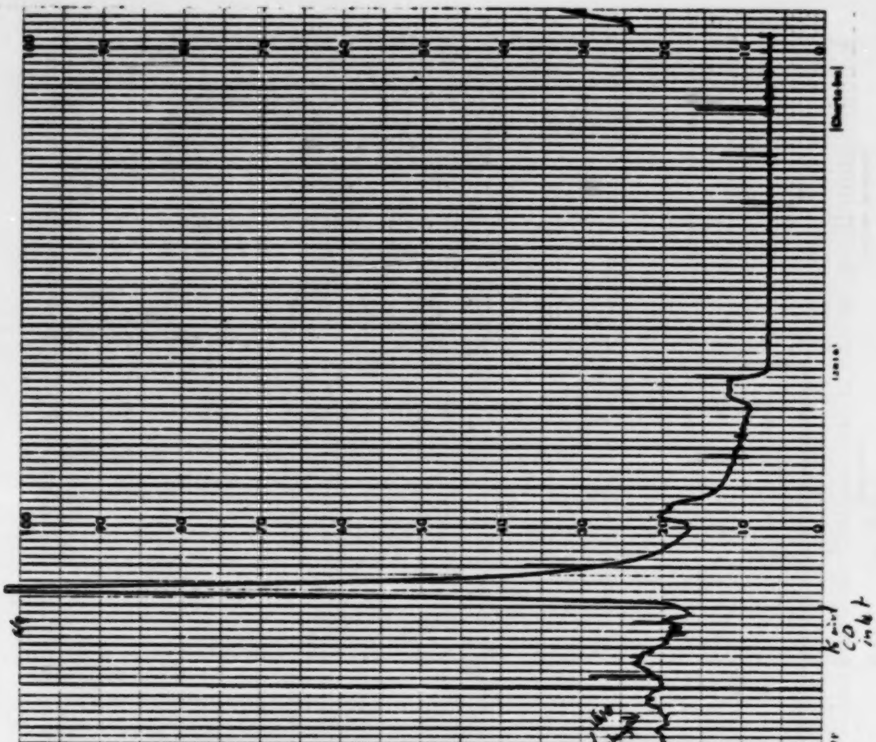

100
90
80
70
60
50
40
30
20
10
0
Ca Inlet
5 min

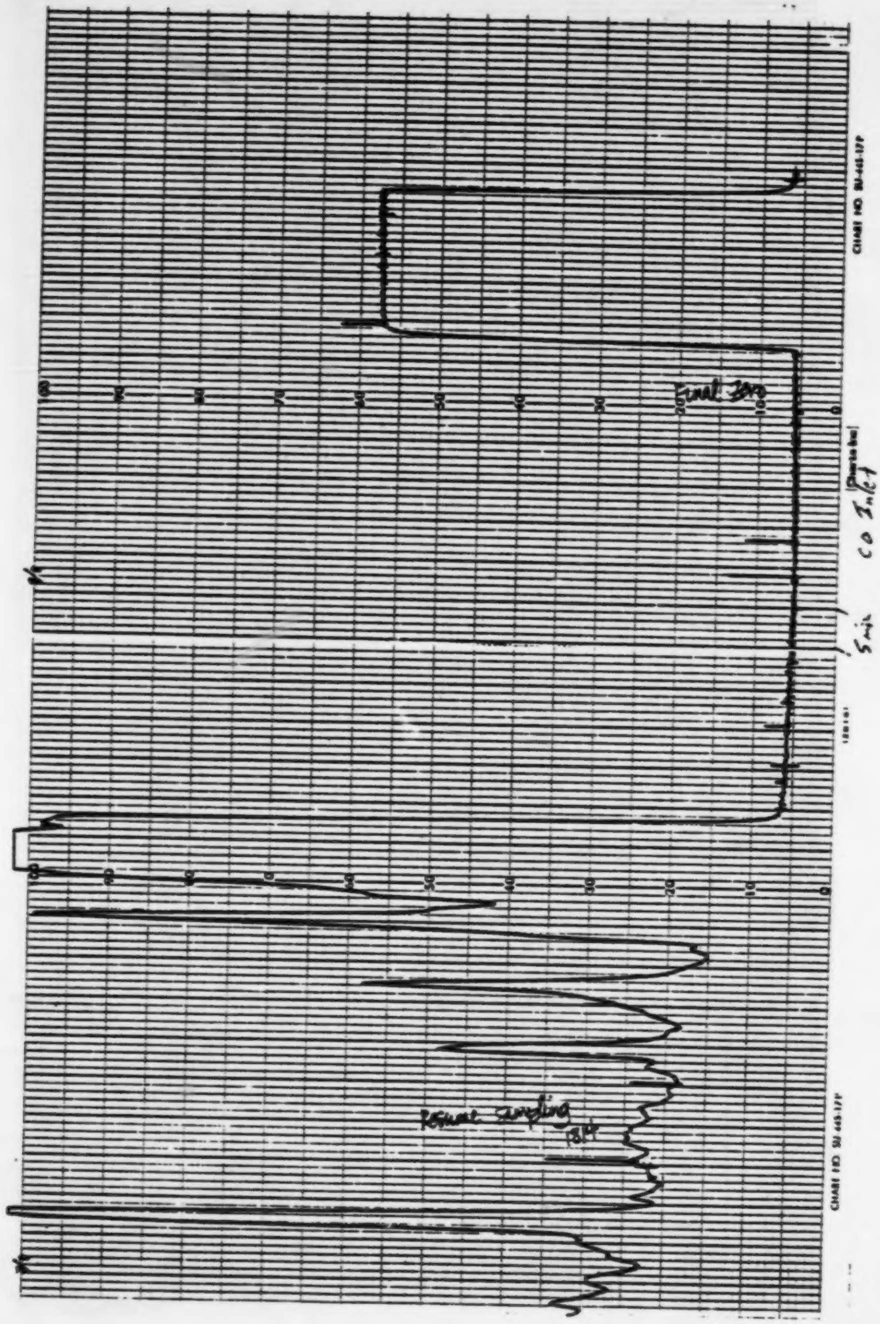
100
90
Final Span
70
60
50
40
30
20
10
0
Charts Inc
Inlet
Final Zero

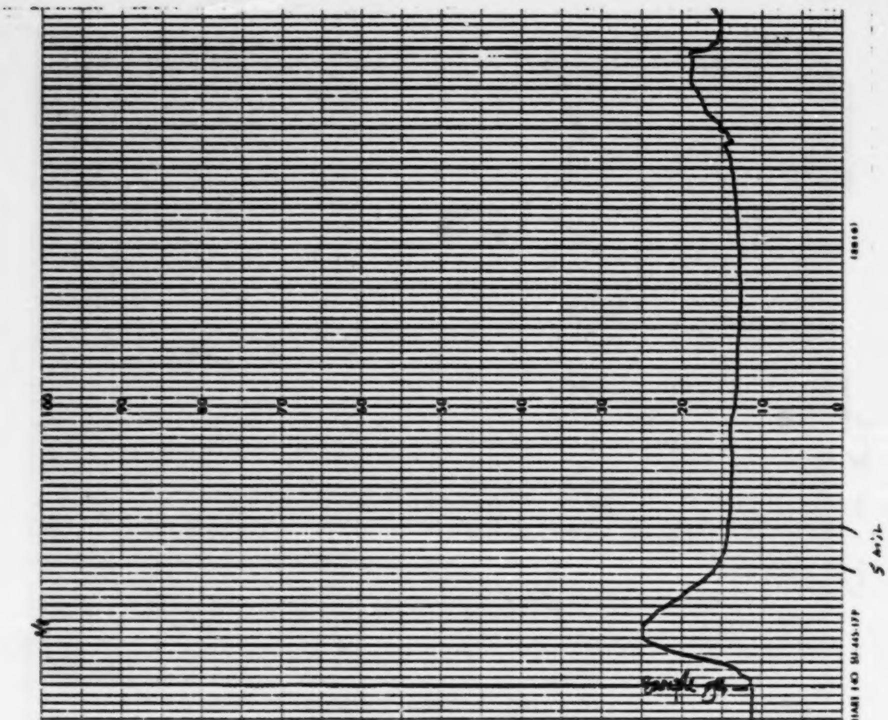

CO Inlet
Initial Span
Initial Zero
Run 5A
Sample
5 min
100
90
80
70
60
50
40
30
20
10
0
CHART NO

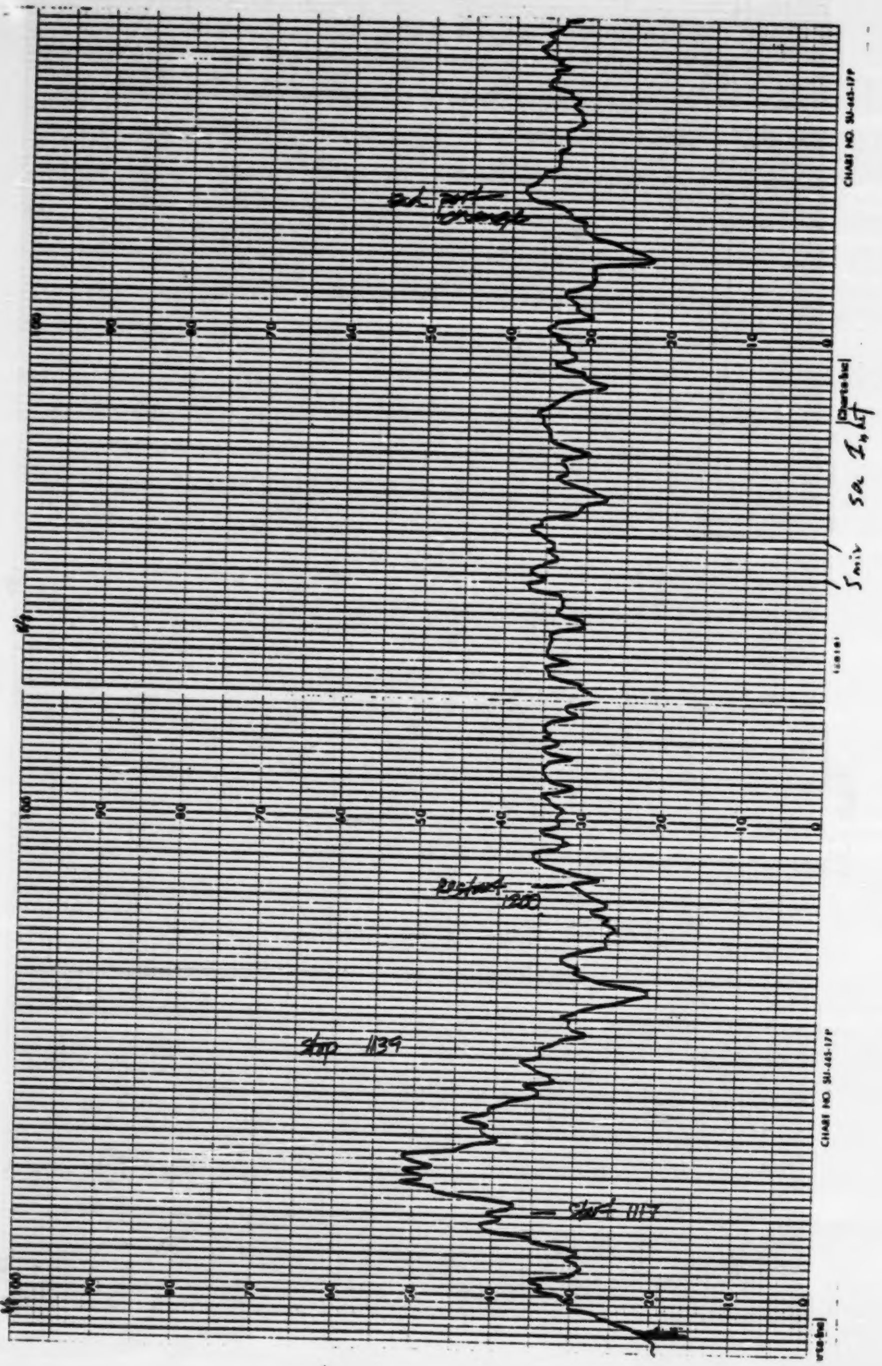


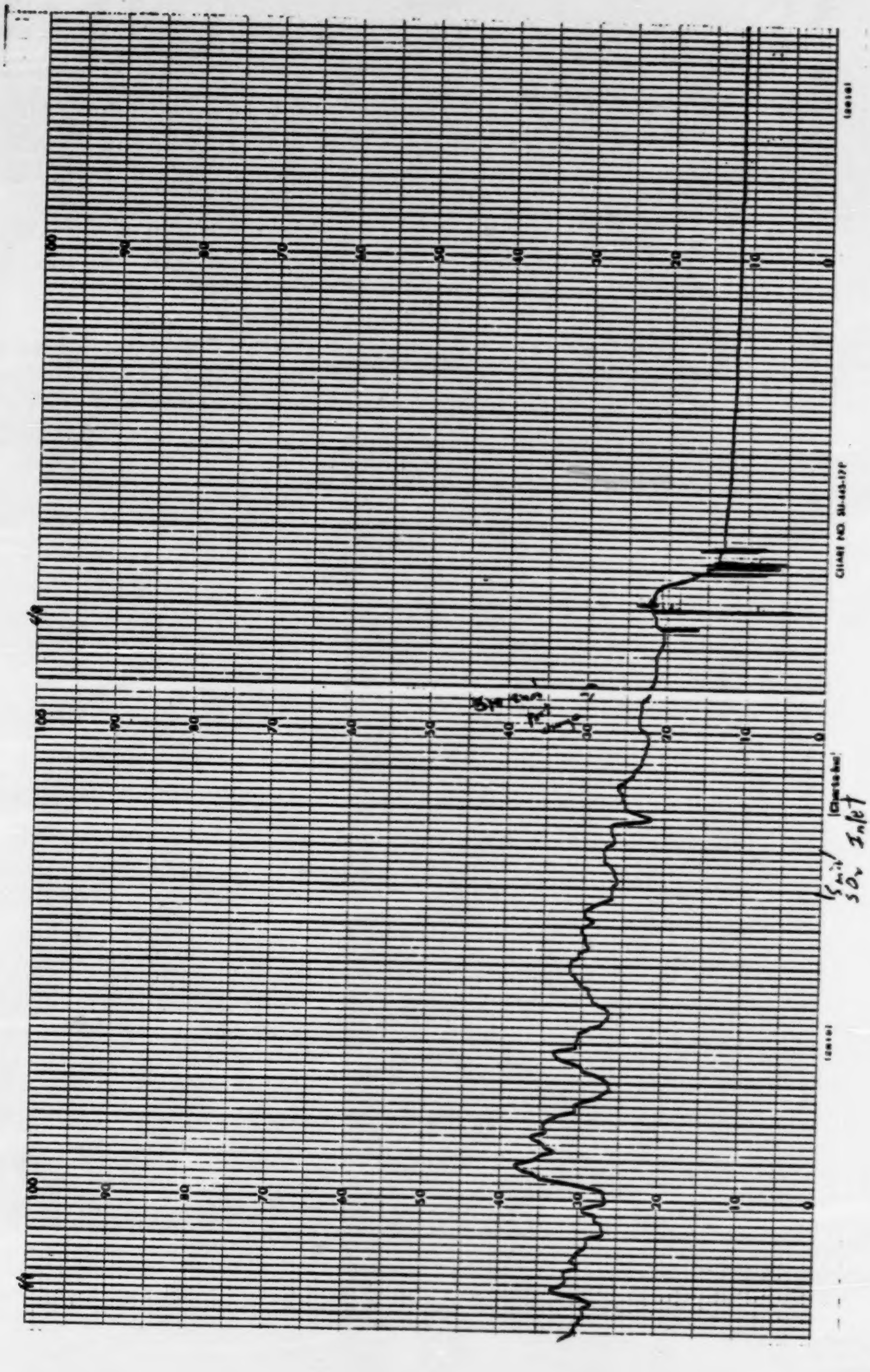
Start 1117
Stop 1139
restart 1200
5 min
CO Inlt
Bal port blank
100
90
80
70
60
50
40
30
20
10
0

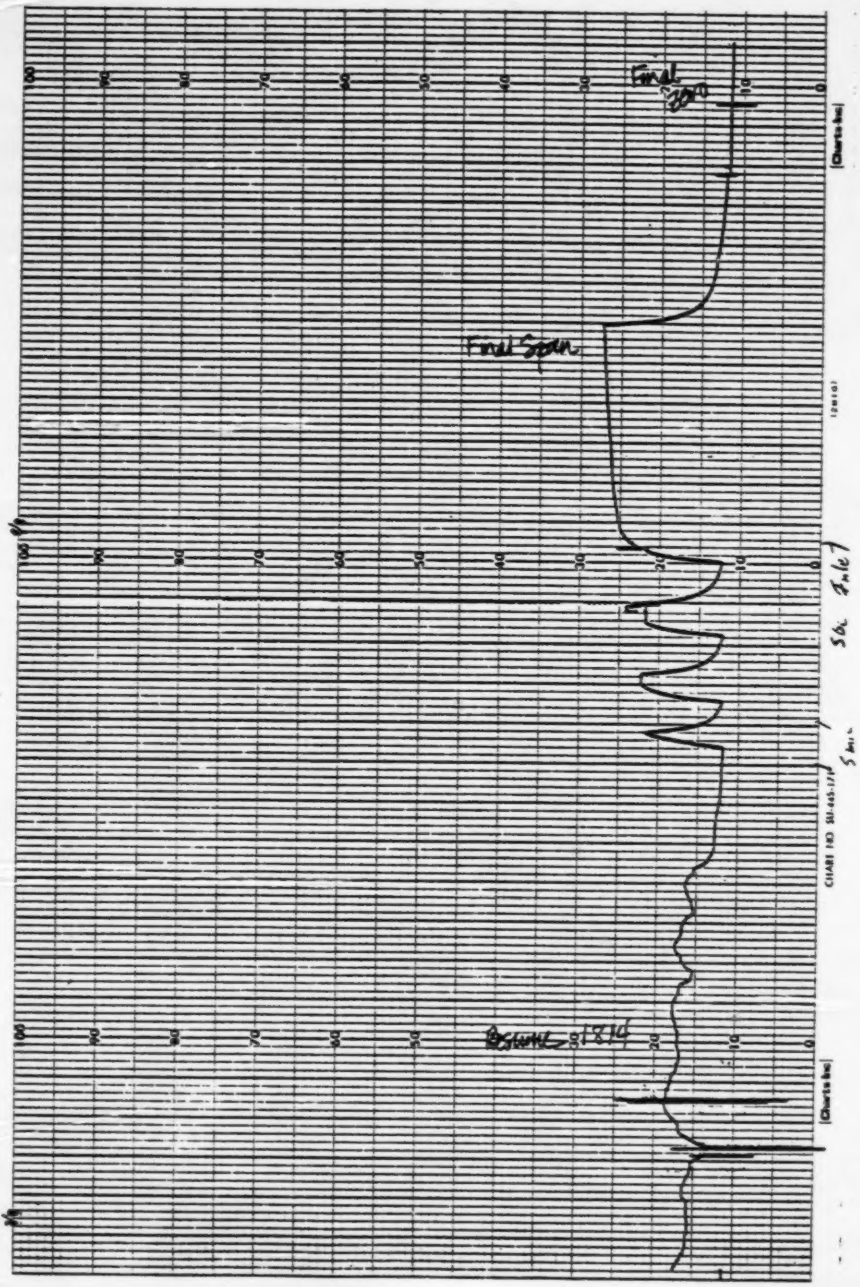

0
10
20
30
40
50
60
70
80
90
100
CO
inlet
CHART NO

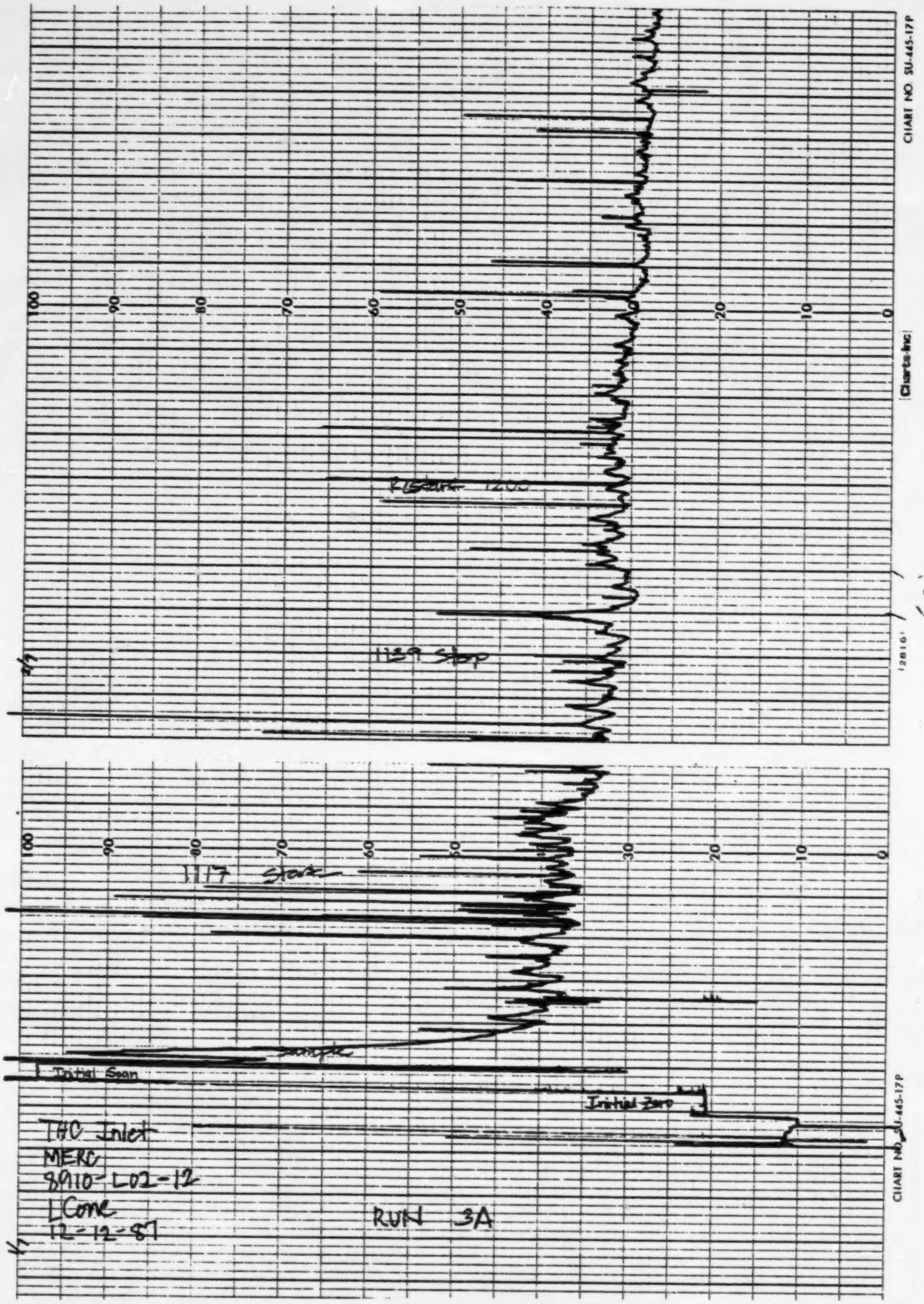

Final Zero
CO Inlet
5 min
Resume sampling
1814
0
10
20
30
40
50
60
70
80
90
100
CHART NO SU-445-17P

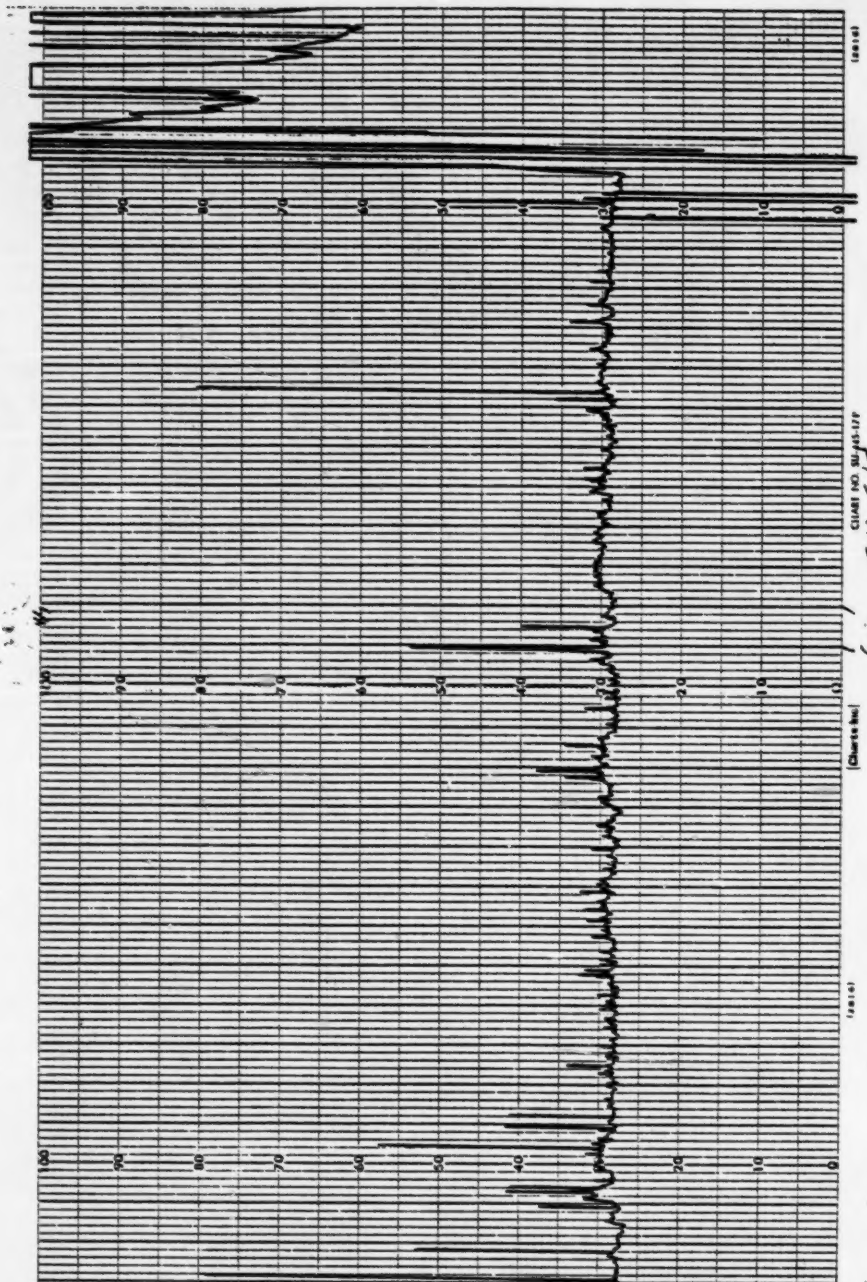

100
90
80
70
60
50
40
30
20
10
0
5 min
CHART NO. SH 445-179
(Charts Inc)
Sample gas
Initial Zero
span adjusted
much better sensitivity
Initial Zero
SO2 Inlet
METC
RUN 3A

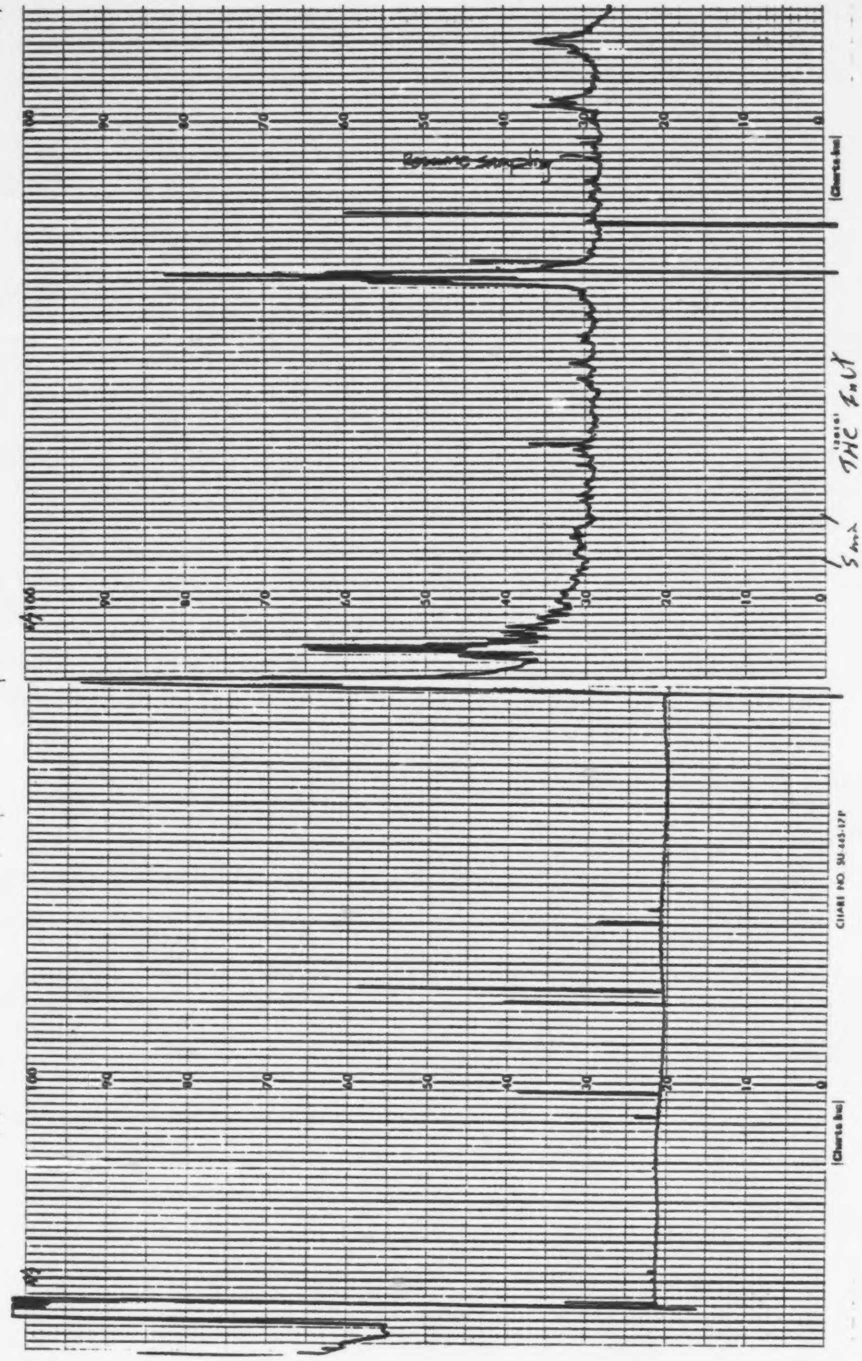

100
90
80
70
60
50
40
30
20
10
0
ed. port change
Restart 1200
Stop 1139
Start 1117
5 min
5a In let
CHART NO. SU-445-17P

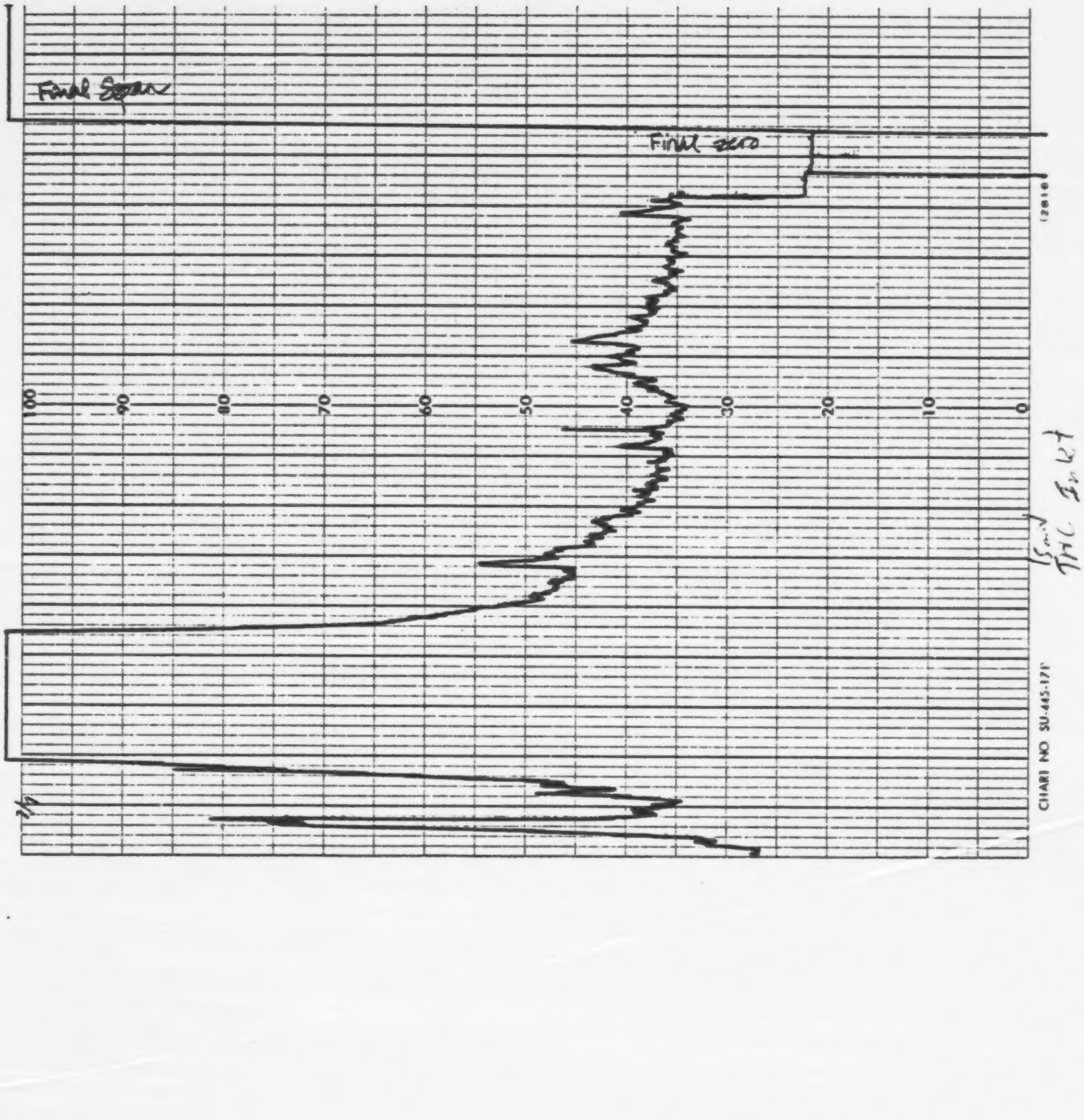

100
90
80
70
60
50
40
30
20
10
0
5 min
SO2 Inlet

Final Zero
Final Span
SO2 Inlet
5 min
Resume 1814
100
90
80
70
60
50
40
30
20
10
0
CHART NO 561-665-171


THC Inlet
MERC
8910-L02-12
LCone
12-12-87
1/1
RUN 3A
Initial Span
Initial Zero
sample
1117 Start
1139 Stop
Restart 1200
5 min
2/2
100
90
80
70
60
50
40
30
20
10
0
Charts-Inc
CHART NO. SU-445-17P
12816


100
90
80
70
60
50
40
30
20
10
0
CHART NO. SU-[illegible]
Chart in [illegible]
5 min
THC I,6


Resume sampling
Span
THC
Zero
100
90
80
70
60
50
40
30
20
10
0
CHART NO. SU 445-17P


Final Span
Final zero
End THC Inlet
100
90
80
70
60
50
40
30
20
10
0
CHART NO SU-445-171
12810
2/4

MR3AIN

TIME		O2 (%)	CO2 (%)	CO (ppm)	THC (ppm C3)	SO2 (ppm)
1116	11.27	5.58	13.07	77.4	1.8	153.8
1117	11.28	6.25	12.35	73.4	2.0	153.0
1118	11.30	7.26	9.63	85.0	2.0	151.2
1119	11.32	9.62	9.93	138.5	2.1	139.2
1120	11.33	9.86	10.85	115.6	1.9	165.4
1121	11.35	9.29	10.27	110.6	2.1	191.0
1122	11.37	9.52	10.38	123.3	2.4	204.9
1123	11.38	9.29	12.18	126.1	2.2	204.9
1124	11.40	7.83	12.91	95.3	2.3	197.4
1125	11.42	6.80	12.99	95.2	2.0	209.3
1126	11.43	6.80	11.63	98.5	1.9	178.5
1127	11.45	7.90	11.00	101.2	1.6	155.0
1128	11.47	8.53	11.23	93.7	1.6	158.1
1129	11.48	8.57	11.69	92.5	1.5	159.2
1130	11.50	7.93	12.51	77.0	1.6	166.8
1131	11.52	7.66	10.66	81.6	1.5	154.1
1132	11.53	8.97	10.81	99.7	1.6	141.5
1133	11.55	9.26	10.76	101.4	1.5	124.5
1134	11.57	8.93	11.73	93.9	1.6	128.2
1135	11.58	8.52	11.70	101.5	1.4	114.7
1136	11.60	8.36	11.63	98.9	1.4	124.9
1137	11.62	8.15	11.88	92.4	1.5	133.1
1138	11.63	8.24	11.24	99.3	1.4	122.6
1139	11.65	8.67	10.37	102.1	1.3	118.8
1140	11.67					
1159	11.98					
1200	12.00	9.82	10.22	119.3	1.3	92.3
1201	12.02	9.58	11.23	113.3	1.3	110.0
1202	12.03	8.66	11.83	107.1	1.3	126.2
1203	12.05	8.02	11.67	100.9	1.3	128.8
1204	12.07	8.08	11.19	100.2	1.4	112.1
1205	12.08	8.53	11.47	110.3	1.3	112.3
1206	12.10	8.26	11.47	100.1	1.3	122.1
1207	12.12	8.36	11.14	99.6	1.3	114.0
1208	12.13	8.71	10.78	106.8	1.2	113.1
1209	12.15	8.84	11.36	100.5	1.2	115.4
1210	12.17	8.45	11.57	95.5	1.4	122.6
1211	12.18	8.26	11.16	100.3	1.3	111.8
1212	12.20	8.48	11.43	98.9	1.2	116.6
1213	12.22	8.40	11.39	94.7	1.2	124.4
1214	12.23	8.40	11.12	99.5	1.2	122.9
1215	12.25	8.60	11.24	96.9	1.2	111.5
1216	12.27	8.43	11.27	91.0	1.2	123.4
1217	12.28	8.49	11.47	92.8	1.1	116.8
1218	12.30	8.17	11.59	86.0	1.1	122.5
1219	12.32	8.26	10.86	89.6	1.1	123.3
1220	12.33	8.80	11.00	98.8	1.1	110.9
1221	12.35	8.74	10.83	91.8	1.0	108.9
1222	12.37	9.08	10.06	97.0	1.1	99.5
1223	12.38	9.58	10.58	104.4	1.0	99.9
1224	12.40	9.15	11.56	93.1	.9	110.4
1225	12.42	8.29	11.48	79.7	.9	122.6

MR3AIN

TIME		O2 (%)	CO2 (%)	CO (ppm)	THC (ppm C3)	SO2 (ppm)
1226	12.43	8.21	11.55	84.4	1.0	117.4
1227	12.45	8.04	11.41	81.5	.9	121.1
1228	12.47	8.37	10.79	84.9	.9	122.1
1229	12.48	8.84	10.93	86.4	.9	120.8
1230	12.50	8.81	10.70	85.6	1.0	118.3
1231	12.52	9.11	10.77	90.9	1.0	101.0
1232	12.53	8.95	11.28	89.0	1.0	110.9
1233	12.55	8.80	10.76	90.1	1.1	115.2
1234	12.57	8.62	12.17	87.2	1.0	114.4
1235	12.58	7.72	12.44	74.9	.9	125.5
1236	12.60	7.24	12.36	70.7	1.0	134.9
1237	12.62	7.12	12.39	67.4	.9	130.1
1238	12.63	7.26	11.78	76.3	.9	131.8
1239	12.65	7.67	11.75	84.4	.9	120.4
1240	12.67	7.84	11.99	82.6	.9	122.7
1241	12.68	7.57	12.30	78.9	.9	121.4
1242	12.70	7.47	12.27	75.8	.8	129.1
1243	12.72	7.34	11.95	70.1	.8	133.1
1244	12.73	7.86	10.70	76.5	.9	125.8
1245	12.75	9.01	9.86	88.0	.9	105.4
1246	12.77	10.04	8.70	99.7	1.0	96.6
1247	12.78	11.23	8.57	132.1	1.0	89.5
1248	12.80	11.04	10.44	107.1	.8	103.0
1249	12.82	9.55	11.54	79.3	.8	116.9
1250	12.83	8.58	10.76	74.5	.8	113.0
1251	12.85	9.01	10.52	83.5	.8	115.7
1252	12.87	9.29	10.66	83.4	.9	105.1
1253	12.88	9.17	11.01	82.4	.8	111.2
1254	12.90	8.68	11.49	76.2	.7	123.8
1255	12.92	8.31	11.75	74.2	.8	125.4
1256	12.93	7.92	11.92	72.3	.7	129.0
1257	12.95	7.71	12.16	72.7	.7	131.3
1258	12.97	7.68	11.23	72.6	.8	126.0
1259	12.98	8.37	10.83	82.7	.9	117.3
1300	13.00	8.91	10.70	91.0	1.0	104.1
1301	13.02	8.93	11.45	84.2	.9	92.6
1302	13.03	8.52	11.34	86.7	.9	103.6
1303	13.05	8.25	12.02	81.6	.8	116.8
1304	13.07	7.89	11.34	77.5	.9	113.2
1305	13.08	8.33	11.33	86.4	.8	112.8
1306	13.10	8.45	11.80	84.5	.8	116.1
1307	13.12	8.03	12.01	78.2	.8	121.7
1308	13.13	7.72	11.57	76.9	.8	125.8
1309	13.15	8.11	11.38	78.5	.9	108.9
1310	13.17	8.27	11.57	75.1	.8	105.7
1311	13.18	8.19	11.39	75.6	.7	109.5
1312	13.20	8.11	11.60	75.9	.7	115.9
1313	13.22	8.22	10.87	75.3	.8	106.2
1314	13.23	9.06	9.90	93.5	.8	96.9
1315	13.25					
1316	13.27					
1317	13.28					
1318	13.30					

MR3AIN

TIME		O2 (%)	CO2 (%)	CO (ppm)	THC (ppm C3)	SO2 (ppm)
1319	13.32					
1320	13.33	8.84	11.17	92.8	1.0	103.9
1321	13.35	8.53	11.79	88.3	1.0	105.3
1322	13.37	7.69	12.63	79.7	1.0	114.5
1323	13.38	6.80	13.00	72.2	1.0	122.9
1324	13.40	6.24	13.38	66.6	.9	139.6
1325	13.42	5.93	12.81	58.8	.9	143.6
1326	13.43	6.53	11.98	62.5	.8	136.5
1327	13.45	7.40	11.62	71.5	.9	131.2
1328	13.47	7.77	11.61	69.6	.9	122.3
1329	13.48	8.18	10.92	76.7	.8	121.3
1330	13.50	8.65	10.62	76.1	.9	120.3
1331	13.52	9.05	10.76	75.3	.9	116.9
1332	13.53	9.20	10.09	80.1	.9	117.8
1333	13.55	9.73	9.95	90.1	.8	111.0
1334	13.57	9.86	10.00	87.9	.9	107.4
1335	13.58	9.89	10.13	90.0	.9	110.1
1336	13.60	9.65	10.62	87.4	.8	111.4
1337	13.62	9.13	11.47	75.1	.9	115.0
1338	13.63	8.10	12.24	65.1	.9	126.7
1339	13.65	7.49	11.87	63.6	.8	125.5
1340	13.67	7.60	11.84	66.5	.9	123.4
1341	13.68	7.73	11.94	68.9	.9	121.7
1342	13.70	7.56	12.18	68.0	.8	130.5
1343	13.72	7.29	12.17	64.5	.9	133.1
1344	13.73	7.36	12.25	64.8	1.0	128.0
1345	13.75	7.30	11.74	71.2	.9	125.2
1346	13.77	7.77	11.44	67.5	.9	117.7
1347	13.78	8.37	10.62	73.2	.9	109.1
1348	13.80	9.08	10.06	81.0	.8	110.2
1349	13.82	9.78	9.89	91.4	1.0	105.4
1350	13.83	9.84	9.82	94.2	1.0	99.9
1351	13.85	10.21	9.59	104.8	1.0	96.3
1352	13.87	10.05	10.39	93.6	1.0	94.4
1353	13.88	9.44	10.55	85.0	1.0	91.6
1354	13.90	9.13	11.87	88.7	.9	99.0
1355	13.92	7.75	11.94	72.6	1.0	114.4
1356	13.93	7.71	12.01	73.0	1.0	106.6
1357	13.95	7.43	12.06	74.6	.9	107.7
1358	13.97	7.70	11.66	72.5	.9	99.8
1359	13.98	7.85	11.51	72.3	.9	101.2
1400	14.00	8.24	11.16	77.1	.9	96.1
1401	14.02	8.41	11.10	73.7	.9	92.8
1402	14.03	8.71	10.54	82.5	.9	84.9
1403	14.05	9.27	10.59	98.1	1.0	83.3
1404	14.07	8.90	11.57	90.6	.8	87.3
1405	14.08	8.04	10.94	76.7	.9	94.3
1406	14.10	9.39	9.07	111.5	1.0	84.3
1407	14.12	10.17	10.16	110.2	.9	82.2
1408	14.13	9.70	11.06	96.7	1.0	92.4
1409	14.15	8.26	12.65	84.2	1.3	120.7
1410	14.17	6.82	12.95	81.1	1.1	134.9
1411	14.18	6.53	11.96	75.4	1.1	137.7

MR3AIN

TIME		O2 (%)	CO2 (%)	CO (ppm)	THC (ppm C3)	SO2 (ppm)
1412	14.20	7.71	10.63	90.3	1.0	123.9
1413	14.22	8.91	10.48	95.4	1.0	120.6
1414	14.23	9.11	11.12	92.9	1.0	128.6
1415	14.25	8.51	11.43	80.9	.9	123.9
1416	14.27	8.08	12.03	75.6	.9	122.6
1417	14.28	7.58	11.60	74.9	.9	114.9
1418	14.30	8.09	10.96	74.4	.8	102.7
1419	14.32	8.76	10.08	81.3	.9	96.4
1420	14.33	9.72	9.86	105.3	.8	84.0
1421	14.35	10.02	9.99	105.7	.9	80.6
1422	14.37	9.92	10.71	98.9	.9	85.5
1423	14.38	8.95	12.44	86.5	1.1	97.3
1424	14.40	7.31	13.20	79.1	1.4	107.5
1425	14.42	6.32	13.22	80.3	1.1	117.1
1426	14.43	6.42	12.24	92.2	1.1	105.2
1427	14.45	7.00	12.65	85.5	1.1	101.2
1428	14.47	6.68	12.65	81.9	.9	97.4
1429	14.48	6.99	11.76	76.3	1.0	85.5
1430	14.50	7.79	12.09	84.3	.9	80.9
1431	14.52	7.45	12.64	74.7	.9	85.3
1432	14.53	6.99	12.39	66.3	1.0	92.4
1433	14.55	7.27	12.22	72.3	1.1	94.8
1434	14.57	7.33	12.17	70.8	1.1	101.1
1435	14.58	7.29	12.46	73.7	1.2	105.8
1436	14.60	7.16	12.22	76.6	1.1	107.5
1437	14.62	7.42	11.84	78.3	1.0	104.4
1438	14.63	7.89	10.95	79.8	1.1	99.3
1439	14.65	8.72	10.93	93.0	1.1	96.9
1440	14.67	8.81	11.56	90.0	1.0	98.7
1441	14.68	8.25	11.52	73.2	1.1	98.9
1442	14.70	8.27	11.71	79.5	1.0	93.9
1443	14.72	8.15	11.30	77.9	1.0	97.5
1444	14.73	8.52	10.29	83.5	1.1	90.6
1445	14.75	9.50	10.08	107.4	1.1	81.0
1446	14.77	9.69	10.69	105.2	1.1	79.9
1447	14.78	9.27	10.99	94.2	1.0	77.5
1448	14.80	8.88	11.79	93.8	1.0	79.7
1449	14.82	7.98	12.52	78.2	1.0	82.7
1450	14.83	7.24	12.63	70.4	.9	85.9
1451	14.85	7.15	11.94	75.6	.9	85.6
1452	14.87	7.60	11.85	78.3	.9	80.7
1453	14.88	7.73	12.34	75.7	1.0	81.3
1454	14.90	7.43	12.00	74.6	1.1	80.9
1455	14.92	9.06	7.37	66.2	1.0	
1456	14.93	9.94	12.48	52.8	1.0	
1457	14.95	7.89	12.06	73.6	1.1	
1458	14.97	7.78	11.50	70.8	1.1	
1459	14.98	8.27	10.66	78.3	1.1	
1500	15.00	9.07	9.88	90.4	1.1	
1501	15.02	9.90	9.79	100.8	1.0	
1502	15.03	10.19	9.41	97.9	1.1	
1503	15.05	10.50	9.53	109.9	1.0	
1504	15.07	10.50	9.83	100.8	1.0	

```
MR3AIN

   TIME                 O2        CO2        CO        THC      SO2
                        (%)       (%)       (ppm)   (ppm C3)   (ppm)
     1505     15.08    10.22     10.48      93.4       1.0
     1506     15.10     9.51     11.53      82.9       1.0
     1507     15.12     8.53     11.59      74.6        .9
     1508     15.13     8.30     11.63      72.1       1.1
     1509     15.15     8.12     12.04      74.8       1.0
     1510     15.17     7.79     11.46      69.7        .9
     1511     15.18     8.28     10.95      71.8       1.0
     1512     15.20     8.81     10.66      80.2       1.0
     1513     15.22     9.13     10.76      82.1        .9
     1514     15.23     9.14     10.72      77.7        .9
     1515     15.25     9.19     10.55      74.8        .9
     1516     15.27     9.43     10.03      83.2        .9
     1517     15.28     9.87     10.17      91.0       1.0
     1518     15.30     9.76     10.83      89.3        .9
     1519     15.32     9.15     11.52      78.5        .8
     1520     15.33     8.51     11.93      70.5        .9
     1521     15.35     8.00     12.40      66.4        .8
     1522     15.37     7.50     11.74      67.7        .7
     1523     15.38     7.71     11.49      63.6        .8
     1524     15.40     8.09      8.56      61.9       1.3
     1525     15.42    11.04      3.34     176.8      11.4
     1526     15.43    15.35       .68     796.3      11.5
     1527
     1814
     1815     18.25     8.20     11.92      88.7        .9
     1816     18.27     7.40     12.31      76.2        .9
     1817     18.28     6.95     12.46      68.9        .8
     1818     18.30     7.01     11.93      67.1        .8
     1819     18.32     7.57     11.19      66.6        .9
     1820     18.33     8.48     10.91      81.4        .9
     1821     18.35     8.93      8.72      87.8       1.4
     1822     18.37    11.50      8.54     206.5       1.3
     1823     18.38    10.18     11.74     183.4       1.0
     1824     18.40     7.86     12.20      86.3        .9
     1825     18.42     6.77     12.93      69.5        .9
     1826     18.43     6.79     11.35      69.0        .9
     1827     18.45     8.31     10.72      85.7       1.0
     1828     18.47     8.71     10.79     105.5       1.2
     1829     18.48     9.24      9.05     137.6       1.5
     1830     18.50    10.94      9.52     260.8       1.3
     1831     18.52     9.58     10.96     179.4       1.0
     1832     18.53     7.66     12.16      82.3        .8
     1833     18.55     6.64     11.84      60.0        .7
     1834     18.57     7.38     10.26      49.9        .7
     1835     18.58     9.01      8.90      55.2        .8
     1836     18.60    11.46      5.14      90.5       1.6

Average=                8.45     11.16     89.92      1.14    115.40
Min=                    5.58       .68     49.90       .70     77.50
Max=                   15.35     13.38    796.30     11.50    209.30
Std. Dev=               1.12      1.34     50.22       .98     23.27
Variance=               1.26      1.79   2521.79       .95    541.58
```

```
MERC RUN#3A MIDPOINT
12/12/87
MIDPOINT MERC
9910-L02-12
GWS
08:45
 0  02    0.73
 1 CO2    1.14
08:46
 0  02    0.69
 1 CO2    1.18
08:47
 0  02    0.69
 1 CO2    1.15
08:48
 0  02    0.64
 1 CO2    1.14
08:48                IN ZERO
 0  02    0.64
 1 CO2    1.14
09:08
 0  02   50.17
 1 CO2   61.63
09:09
 0  02   48.94
 1 CO2   74.72
09:10
 0  02   47.94
 1 CO2   76.96
09:11                INIT. LK
 0  02   48.60        CHK OK
 1 CO2   77.51
09:12
 0  02   48.10
 1 CO2   77.61
09:13
 0  02   48.11
 1 CO2   77.72
09:14
 0  02   48.15
 1 CO2   77.72
09:15
 0  02   48.23
 1 CO2   77.72
09:16
 0  02   48.29
 1 CO2   77.74
09:17
 0  02   48.26
 1 CO2   77.74
09:18
 0  02   48.20
```

```
 1 CO2  [illegible]
09:19
 0  02  48.27
 1 CO2  77.74
09:19          IN SPAN
 0  02  48.27     12.09
 1 CO2  77.74     12.00
   1 09:20
 37.21 75.93
  9.28 11.51
   2 09:29
 34.45 76.00
  8.58 11.53
   3 09:30
 35.35 76.30
  8.81 11.61
   4 09:31
 40.33 75.85
 10.07 11.49
   5 09:32
 40.61 75.27
 10.15 11.33
   6 09:33
 37.54 75.18
  9.37 11.31
   7 09:34
 33.32 76.18
  8.30 11.58
   9 09:35
 37.85 76.06
  9.45 11.54
   9 09:36
 39.60 75.39
  9.89 11.37
  10 09:37
 44.25 74.41
 11.07 11.11
  11 09:38
 43.64 73.57
 10.92 10.89
  12 09:39
 45.39 73.14
 11.36 10.79
  13 09:40
 44.51 72.72
 11.14 10.67
  14 09:41
 45.07 72.38
 11.28 10.58
  15 09:42
 47.18 71.80
 11.31 10.43
  16 09:43
 50.67 70.21
 12.76 10.03
  17 09:44
 50.91 68.99
 12.76  9.73
  18 09:45
 56.08 67.05
 14.07  9.26
  19 09:46
 59.38 63.36
 14.91  8.39
  20 09:47
 60.20 60.47
 15.12  7.74
  21 09:48
 59.65 59.83
 14.90  7.60
  22 09:49
 60.40 59.13
 15.17  7.45
  23 09:50
 59.15 58.82
 14.85  7.38
  24 09:51
 59.77 59.01
 15.01  7.42
  25 09:52
 60.04 58.43
 15.00  7.30
  26 09:53
 61.17 57.22
 15.36  7.04
  27 09:54
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 60.16 56.72
 15.11  6.94
  28 09:55
 59.60 57.61
 14.97  7.13
  29 09:56
 59.59 57.50
 14.96  7.10
  30 09:57
 60.20 57.50
 15.12  7.10
  31 09:58
 59.70 57.20
 14.99  7.04
  32 09:59
 58.63 56.86
 14.72  6.97
  33 10:00
 53.36 48.47
 13.38  5.32
  34 10:01
 57.26 38.69
 14.37  3.67
  35 10:02
 56.59 43.24
 14.20  4.40
  36 10:03
 52.62 52.94
 13.19  6.17
  37 10:04
 54.63 52.32
 13.70  6.10
  38 10:05
 52.08 45.73
 13.06  4.83
  39 10:06
 53.10 51.42
 13.32  5.87
  40 10:07
 53.44 52.13
 13.40  6.01
  41 10:08
 55.24 48.44
 13.86  5.31
  42 10:09
 56.10 46.95
 14.08  5.04
  43 10:10
 57.21 48.97
 14.36  5.41
  44 10:11
 52.16 48.17
 13.08  5.27
  45 10:12
 56.57 51.16
 14.20  5.83
  46 10:13
 57.36 51.73
 14.40  5.93
  47 10:14
 50.00 52.13
 12.55  6.01
  48 10:15
 53.49 47.96
 13.42  5.23
  49 10:16
 58.44 50.59
 14.67  5.72
  50 10:17
 56.36 47.37
 14.14  5.12
  51 10:18
 48.63 53.04
 12.19  6.19
  52 10:19
 51.81 49.44
 12.99  5.50
  53 10:20
 52.14 46.21
 13.07  4.91
  54 10:21
 55.00 39.36
 13.82  3.77
  55 10:22
 58.91 48.47
```

```
 14.79 [illegible]
  56 10:23
 56.03 47.66
 14.06  5.17
  57 10:24
 57.49 53.30
 14.43  6.24
  58 10:25
 59.00 45.31
 14.81  4.76
  59 10:26
 57.26 42.79
 14.37  4.33
  60 10:27
 53.76 47.63
 13.48  5.17
  61 10:28
 53.43 52.15
 13.40  6.02
  62 10:29
 54.55 53.73
 13.68  6.33
  63 10:30
 57.46 44.80
 14.42  4.67
  64 10:31
 50.93 48.32
 12.77  5.29
  65 10:32
 52.12 58.60
 13.07  7.34
  66 10:33
 58.63 39.85
 14.72  3.85
  67 10:34
 53.82 53.26
 13.50  6.23
  68 10:35
 52.39 50.00
 13.14  5.61
  69 10:36
 56.79 59.59
 14.25  7.77
  70 10:37
 49.01 59.52
 12.28  7.54
  71 10:38
 47.90 59.40
 12.00  7.51
  72 10:39
 42.60 61.46
 10.70  7.96
  73 10:40
 41.91 63.27
 10.48  8.37
  74 10:41
 42.16 68.39
 10.54  9.58
  75 10:42
 43.53 72.33
 10.39 10.57
  76 10:43
 35.84 74.04
  8.94 11.31
  77 10:44
 32.61 75.64
  8.12 11.43
  78 10:45
 34.15 75.80
  8.51 11.48
  79 10:46
 30.44 76.21
  7.56 11.59
  80 10:47
 27.13 77.08
  6.72 11.82
  81 10:48
 25.39 75.62
  6.33 11.43
  82 10:49
 30.93 77.41
  7.69 11.91
  83 10:50
 28.52 77.92
  7.38 [illegible]
  84 10:51
```

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28.33 77.43
 7.03 11.91
 85 10:52
30.87 77.45
 7.67 11.87
 86 10:53
31.58 76.85
 7.85 11.76
 87 10:54
26.88 77.39
 6.66 11.90
 88 10:55
29.88 77.43
 7.42 11.91
 89 10:56
31.91 76.86
 7.94 11.76
 90 10:57
29.14 76.97
 7.23 11.79
 91 10:58
25.67 77.34
 6.35 11.89
 92 10:59
25.91 74.89
 6.41 11.23
 93 11:00
29.03 77.69
 7.21 11.99
 94 11:01
26.10 77.54
 6.46 11.94
 95 11:02
31.56 76.99
 7.85 11.80
 96 11:03
28.19 77.09
 6.99 11.82
 97 11:04
25.36 78.04
 6.27 12.06
 98 11:05
24.59 78.27
 6.08 12.14
 99 11:06
21.55 78.64
 5.30 12.25
100 11:07
24.66 78.53
 6.10 12.22
101 11:08
21.37 78.66
 5.26 12.25
102 11:09
20.32 78.96
 4.99 12.34
103 11:10
30.69 78.21
 7.65 12.13
104 11:11
35.00 76.48
 8.72 11.66
105 11:12
27.02 77.52
 6.70 11.94
106 11:13
33.07 76.55
 8.23 11.68
107 11:14
19.21 78.85
 4.71 12.08
108 11:15
17.16 79.15
 4.19 12.39
109 11:16
21.85 78.99
 5.38 12.34
110 11:17        ← START
                    3A
26.23 78.35
 6.50 12.17
111 11:18
39.74 76.53
 9.92 11.67
112 11:19
37.02 75.43
```

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 9.23 11.38
113 11:20
30.53 72.90
 7.59 10.74
114 11:21
33.21 76.27
 8.27 11.60
115 11:22
34.16 73.81
 8.51 10.95
116 11:23
24.64 72.44
 6.14 10.60
117 11:24
24.92 77.72
 6.16 11.99
118 11:25
23.10 78.40
 5.70 12.18
119 11:26
28.34 78.14
 7.03 12.11
120 11:27
30.80 74.66
 7.68 11.17
121 11:28
30.90 76.96
 7.60 11.79
122 11:29
30.04 77.00
 7.46 11.80
123 11:30
26.16 77.70
 6.48 11.99
124 11:31
29.83 77.59
 7.41 11.96
125 11:32
32.46 76.60
 8.08 11.69
126 11:33
35.60 76.48
 8.87 11.66
127 11:34
27.31 77.02
 6.77 11.80
128 11:35
30.21 73.99
 7.51 11.00
129 11:36
30.47 74.28
 7.57 11.07
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26.64 77.55
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131 11:38
31.42 77.31
 7.81 11.88
132 11:39
30.74 76.90      Stop 1139
 7.64 11.77
133 11:40
31.96 76.31
 7.95 11.61
134 11:41
30.42 76.57
 7.56 11.68
135 11:42
27.64 77.09
 6.85 11.82
136 11:43
24.90 77.78
 6.16 12.01
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36.89 76.71
 9.20 11.72
138 11:45
48.49 73.50
12.15 10.87
139 11:46
47.17 70.80
11.81 10.18
140 11:47
29.49 73.69
 7.32 10.92
```

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29.81 75.08
 7.40 11.55
142 11:49
27.50 76.94
 6.82 11.78
143 11:50
28.95 76.93
 7.19 11.78
144 11:51
35.20 76.12
 8.77 11.56
145 11:52
37.93 75.06
 9.47 11.28
146 11:53
39.75 74.25
 9.93 11.07
147 11:54
35.19 74.46
 8.77 11.12
148 11:55
37.17 74.68
 9.27 11.18
149 11:56
36.82 74.91
 9.18 11.24
150 11:57
40.12 74.73
10.02 11.19
151 11:58
38.08 72.14
 9.50 10.52
152 11:59
33.88 75.53
 8.44 11.40
153 12:00
33.62 75.66
 8.37 11.44
154 12:01
31.87.73.81
 7.93 10.95
155 12:02
26.87 76.38
 6.66 11.79
156 12:03
28.12 77.30
 6.97 11.86
157 12:04
30.62 77.26
 7.61 11.87
158 12:05
31.55 77.03
 7.85 11.31
159 12:06
28.87 77.22
 7.17 11.86
160 12:07
29.27 77.03
 7.27 11.81
161 12:08
33.64 76.80
 8.38 11.74
162 12:09
29.62 76.82
 7.36 11.75
163 12:10
27.63 77.12
 6.85 11.83
164 12:11
31.20 77.11
 7.76 11.83
165 12:12
29.24 77.13
 7.26 11.83
166 12:13
30.68 77.10
 7.63 11.83
167 12:14
29.47 77.14
 7.32 11.83
168 12:15
31.70 77.01
 7.88 11.80
169 12:16
30.19 75.16
```

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 7.50 11.30
170 12:17
30.10 77.08
 7.48 11.82
171 12:18
28.50 77.33
 7.07 11.89
172 12:19
32.07 77.11
 7.98 11.83
173 12:20
31.51 76.69
 7.84 11.71
174 12:21
31.39 76.77
 7.96 11.74
175 12:22
33.34 76.31
 8.30 11.61
176 12:23
33.80 76.02
 8.42 11.53
177 12:24
30.38 76.55
 7.55 11.68
178 12:25
26.53 77.14
 6.57 11.84
179 12:26
28.47 77.17
 7.06 11.85
180 12:27
27.93 77.30
 6.93 11.88
181 12:28
29.79 76.87
 7.40 11.76
182 12:29
31.47 76.70
 7.83 11.72
183 12:30
30.25 76.64
 7.52 11.70
184 12:31
32.23 76.45
 8.02 11.65
185 12:32
28.55 76.79
 7.08 11.74
186 12:33
32.93 76.66
 8.20 11.71
187 12:34
25.83 77.12
 6.39 11.83
188 12:35
23.41 77.85
 5.78 12.03
189 12:36
26.51 77.95
 6.57 12.06
190 12:37
24.94 78.10
 6.17 12.10
191 12:38
27.41 77.89
 6.80 12.04
192 12:39
25.07 75.49
 6.20 11.39
193 12:40
27.13 77.61
 6.72 11.96
194 12:41
26.78 77.98
 6.63 12.06
195 12:42
26.81 71.95
 6.64 10.47
196 12:43
25.09 77.80
 6.21 12.02
197 12:44
32.79 76.77
 8.16 11.74
```

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198 12:45
36.58 75.95
 9.12 11.52
199 12:46
41.43 74.54
10.33 11.14
200 12:47
41.05 73.69
10.26 10.92
201 12:48
30.38 75.92
 7.55 11.51
202 12:49
27.84 77.06
 6.90 11.81
203 12:50
33.05 76.73
 8.23 11.72
204 12:51
32.34 76.29
 9.05 11.61
205 12:52
32.99 76.20
 9.21 11.58
206 12:53
28.53 76.72
 7.00 11.72
207 12:54
29.49 77.15
 7.32 11.84
208 12:55
29.32 77.37
 7.03 11.90
209 12:56
28.06 77.63
 6.96 11.97
210 12:57
26.86 77.88
 6.66 12.04
211 12:58
30.97 77.36
 7.79 11.90
212 12:59
33.11 76.73
 8.24 11.72
213 13:00
33.62 76.30
 8.37 11.61
214 13:01
30.72 76.94
 7.63 11.78
215 13:02
31.41 77.00
 7.81 11.80
216 13:03
28.30 77.56
 7.02 11.95
217 13:04
30.03 77.25
 7.46 11.87
218 13:05
30.73 77.11
 7.64 11.83
219 13:06
29.97 77.29
 7.44 11.88
220 13:07
27.12 77.76
 6.72 12.00
221 13:08
29.63 77.41
 7.36 11.91
222 13:09
30.60 77.18
 7.61 11.85
223 13:10
30.26 77.14
 7.52 11.84
224 13:11
29.10 77.17
 7.22 11.85
225 13:12
30.01 77.35
 7.46 11.89
226 13:13
32.44 76.82
```

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 8.07 11.75
227 13:14
36.65 75.77
 9.14 11.47
228 13:15
35.49 76.01
 8.85 11.53
229 13:16
34.77 76.16
 8.66 11.57
230 13:17
33.72 76.47
 8.40 11.66
231 13:18
34.26 76.40
 8.53 11.64
232 13:19
32.07 76.69
 7.98 11.71
233 13:20
32.20 76.83
 8.01 11.75
234 13:21
29.65 77.38
 7.36 11.88
235 13:22
25.48 78.12
 6.31 12.10
236 13:23
23.53 78.52
 5.81 12.21
237 13:24
21.36 78.80
 5.26 12.29
```

START Part 2

```
238 13:25
24.55 78.48
 6.07 12.20
239 13:26
28.19 77.86
 6.99 12.03
240 13:27
30.09 77.43
 7.48 11.92
241 13:28
30.27 77.35
 7.52 11.89
242 13:29
33.32 76.74
 8.29 11.73
243 13:30
34.40 76.60
 8.57 11.69
244 13:31
35.60 76.26
 8.87 11.60
245 13:32
36.70 75.86
 9.15 11.49
246 13:33
74.01 54.02
19.62  6.39
247 13:34
59.34 50.01
15.03  5.61
248 13:35
38.52 71.75
 9.61 10.42
249 13:36
36.07 74.97
 8.99 11.26
```

Flow was off-line

```
250 13:37
25.46 73.01
 6.30 10.74
251 13:38
10.21 62.36
 2.43  8.16
252 13:39
24.61 69.41
 6.09  9.83
253 13:40
29.25 76.44
 7.26 11.65
254 13:41
 3.00 31.33
 0.61  5.90
```

```
255 13:42
53.39 26.21
13.44  1.97
256 13:43
54.98 32.36
13.79  2.76
```

← on-line

```
257 13:44
21.80 70.34
 5.37 10.07
258 13:45
28.98 77.11
 7.19 11.83
259 13:46
30.69 77.19
 7.63 11.85
260 13:47
34.21 76.46
 8.52 11.65
261 13:48
36.48 75.85
 9.10 11.49
262 13:49
37.68 75.44
 9.40 11.38
263 13:50
37.69 75.46
 9.41 11.38
264 13:51
38.79 74.98
 9.68 11.26
265 13:52
35.64 75.86
 8.88 11.49
266 13:53
34.64 76.24
 8.63 11.59
267 13:54
29.33 77.19
 7.28 11.85
268 13:55
28.40 77.74
 7.05 12.00
269 13:56
28.90 77.61
 7.17 11.96
270 13:57
27.95 77.89
 6.93 12.04
271 13:58
30.24 77.44
 7.51 11.92
272 13:59
30.83 77.35
 7.66 11.89
273 14:00
31.84 76.98
 7.92 11.79
274 14:01
31.98 76.88
 7.95 11.77
275 14:02
34.74 76.32
 8.65 11.61
276 14:03
35.34 76.14
 8.81 11.57
277 14:04
30.55 77.14
 7.59 11.83
278 14:05
31.81 76.99
 7.91 11.80
279 14:06
41.19 74.48
10.29 11.13
280 14:07
36.28 75.67
 9.05 11.44
281 14:08
32.89 76.48
 8.19 11.66
282 14:09
25.28 77.99
 6.25 12.07
283 14:10
```

```
 5.76 12.20
284 14:11
27.67 77.81
 6.86 12.02
285 14:12
33.88 76.52
 8.44 11.67
286 14:13
34.83 76.15
 8.68 11.57
287 14:14
32.05 76.58
 7.97 11.69
288 14:15
31.57 76.89
 7.85 11.77
289 14:16
32.16 76.79
 8.00 11.74
290 14:17
31.26 76.67
 7.77 11.71
291 14:18
29.99 76.77
 7.45 11.74
292 14:19
29.67 77.02
 7.37 11.80
293 14:20
34.57 76.34
 8.61 11.62
294 14:21
37.06 75.59
 9.25 11.42
295 14:22
35.77 75.73
 8.92 11.46
296 14:23
29.13 76.96
 7.23 11.79
297 14:24
23.23 78.21
 5.73 12.13
298 14:25
21.66 78.63
 5.34 12.24
299 14:26
25.67 78.14
 6.35 12.11
300 14:27
25.07 78.26
 6.20 12.14
301 14:28
25.40 78.34
 6.23 12.16
302 14:29
29.30 77.58
 7.28 11.96
303 14:30
27.84 77.69
 6.90 11.99
304 14:31
24.98 78.19
 6.18 12.12
305 14:32
26.08 78.11
 6.46 12.10
306 14:33
26.90 77.88
 6.67 12.04
307 14:34
27.28 77.88
 6.76 12.04
308 14:35
25.95 78.11
 6.42 12.10
309 14:36
27.10 77.97
 6.72 12.06
310 14:37
28.76 77.62
 7.14 11.97
311 14:38
32.62 76.81
 8.12 11.75
```

```
312 14:39
32.79 76.59
 8.16 11.69
313 14:40
30.28 77.14
 7.52 11.84
314 14:41
30.12 77.25
 7.48 11.87
315 14:42
29.27 77.38
 7.27 11.90
316 14:43
31.01 77.08
 7.71 11.82
317 14:44
35.30 76.07
 8.80 11.55
318 14:45
36.34 75.68
 9.06 11.44
319 14:46
33.65 76.32
 8.38 11.62
320 14:47
32.28 76.68
 8.03 11.71
321 14:48
28.80 77.41
 7.15 11.91
322 14:49
25.75 78.13
 6.37 12.11
323 14:50
25.07 78.28
 6.20 12.15
324 14:51
28.21 77.72
 7.00 11.99
325 14:52
28.72 77.55
 7.13 11.95
326 14:53
26.30 78.02
 6.51 12.08
327 14:54
26.07 78.02
 6.46 12.07
328 14:55
26.76 77.95
 6.63 12.06
329 14:56
25.23 78.17
 6.24 12.12
330 14:57
27.48 77.85
 6.81 12.03
331 14:58
29.94 77.27
 7.44 11.87
332 14:59
33.79 76.39
 8.41 11.63
333 15:00
36.74 75.52
 9.16 11.40
334 15:01
36.84 75.43
 9.19 11.38
335 15:02
38.66 74.86
 9.65 11.23
336 15:03
38.16 75.03
 9.52 11.27
337 15:04
36.57 75.39
 9.12 11.37
338 15:05
33.74 76.17
 8.40 11.57
339 15:06
28.41 77.41
 7.10 11.91
340 15:07
```

```
 7.15 11.90
341 15:08
28.52 77.44
 7.08 11.92
342 15:09
26.73 77.77
 6.62 12.01
343 15:10
29.67 77.19
 7.37 11.85
344 15:11
31.44 76.73
 7.82 11.73
345 15:12
32.82 76.37
 8.17 11.63
346 15:13
32.13 76.56
 7.99 11.68
347 15:14
32.70 76.48
 8.14 11.66
348 15:15
33.31 76.25
 8.29 11.60
349 15:16
35.49 75.66
 8.85 11.44
350 15:17
34.86 75.83
 8.69 11.48
351 15:18
32.27 76.63
 8.03 11.70
352 15:19
26.67 76.64
 6.61 11.70
353 15:20
27.83 77.63
 6.90 11.97
354 15:21
23.03 76.95
 5.68 11.79
355 15:22
28.06 77.39
 6.96 11.90
356 15:23
28.43 77.17
 7.06 11.84
357 15:24
39.47 73.29
 9.86 10.82
358 15:25
58.77 60.42
14.76  7.73
359 15:29
55.83 36.37
14.01  3.32
360 15:30
56.98  7.00
14.30  0.33
361 15:32
66.66  9.28
16.76  0.40
362 15:33
63.55  7.24
15.97  0.34
363 15:34
59.10  9.17
14.84  0.46
364 15:35
57.73 26.14
14.49  1.98
365 15:36
62.49 28.14
15.70  2.22
366 15:37
58.40 27.70
14.66  2.17
367 15:38
62.90 29.21
15.80  2.35
368 15:39
59.87 28.77
15.03  2.30
```

a good pitch change

```
369 15:40
59.93 29.63
15.05  2.40
370 15:41
61.44 30.03
15.43  2.45
371 15:42
62.06 28.90
15.59  2.31
372 15:43
57.52 13.10
14.44  0.73
373 15:44
59.34  7.82
14.90  0.38
374 17:59
53.13 74.60
13.32 11.16
375 18:00
54.22 72.04
13.60 10.49
376 18:01
33.68 72.99
 8.39 10.74
377 18:02
25.73 76.89
 6.37 11.77
378 18:03
31.11 77.72
 7.74 11.99
379 18:04
30.75 77.64
 7.64 11.97
380 18:05
29.68 77.87
 7.37 12.03
381 18:06
30.57 77.57
 7.60 11.95
382 18:07
29.45 77.39
 7.31 11.90
383 18:08
33.40 77.57
 8.31 11.95
384 18:09
33.18 77.41
 8.26 11.91
385 18:10
34.52 77.22
 8.60 11.86
386 18:11
34.92 77.07
 8.70 11.82
387 18:12
35.33 76.89
 8.80 11.77
388 18:13
31.48 77.25
 7.83 11.87
389 18:14
30.89 77.55
 7.68 11.95
390 18:15
32.63 77.43
 8.12 11.93
391 18:16
28.74 77.64
 7.13 11.97
392 18:17
27.12 77.94
 6.72 12.05
393 18:18
27.09 78.12
 6.71 12.10
394 18:19
29.66 78.12
 7.37 12.10
395 18:20
33.98 77.64
 8.46 11.97
396 18:21
34.18 77.49
 8.51 11.93
397 18:22
```

restart

```
 9.46 11.88
398 18:23
46.52 76.32
11.65 11.61
399 18:24
33.39 76.01
 8.31 11.53
400 18:25
29.41 76.43
 7.30 11.65
401 18:26
25.66 77.17
 6.35 11.84
402 18:27
33.90 77.33
 8.44 11.89
403 18:28
34.29 77.12
 8.52 11.83
404 18:29
37.77 76.70
 9.43 11.72
405 18:30
44.31 75.30
11.09 11.34
406 18:31
35.46 75.83
 8.84 11.48
407 18:32
27.70 77.10
 6.87 11.83
408 18:33
26.04 77.85
 6.45 12.03
409 18:34
32.17 77.33
 8.00 11.99
410 18:35
37.74 76.14
 9.42 11.57
411 18:36
51.37 73.09
12.89 10.76
412 18:37
58.73 68.41
14.76  9.59
413 18:38
59.25 64.76
14.88  8.72
414 18:39
52.60 66.33
13.19  9.20
415 18:40
51.70 63.05
12.96  9.50
416 18:41
54.05 67.56
13.56  9.38
417 18:42
56.60 66.05
14.21  9.02
418 18:43
61.96 62.14
15.56  8.11
419 18:44
63.51 59.43
15.96  7.30
420 18:45
63.85 56.27
16.05  6.84
421 18:46
64.71 54.39
16.26  6.46
422 18:47
64.32 54.10
16.16  6.40
423 18:48
63.86 54.00
16.05  6.38
424 18:49
64.22 53.57
16.14  6.30
425 18:50
64.17 53.74
16.13  6.25
```

```
426 18:51
64.46 52.77
16.20  6.14
427 18:52
65.94 50.42
16.57  5.68
428 18:53
66.20 48.99
16.64  5.42
429 18:54
66.61 '47.89
16.74  5.22
430 18:55
67.21 46.47
16.90  4.96
431 18:56
67.78 44.54
17.04  4.62
432 18:57
66.47 44.91
16.71  4.69
433 18:58
65.85 45.80
16.55  4.84
434 18:59
65.45 46.41
16.45  4.95
435 19:00
59.44 47.19
14.93  5.09
436 19:01
61.27 47.53
15.39  5.15
437 19:02
64.78 47.67
16.28  5.17
438 19:03
59.16 48.02
14.85  5.24
439 19:04
57.18 48.34
14.35  5.30
440 19:05
64.33 48.19
16.17  5.27
441 19:06
58.01 48.53
14.56  5.33
442 19:07
61.22 48.67
15.38  5.36
443 19:08
58.82 48.90
14.77  5.40
444 19:09
62.57 48.94
15.72  5.41
445 19:10
63.49 49.32
15.95  5.48
446 19:11
61.52 49.51
15.45  5.51
447 19:12
59.63 49.80
14.97  5.57
448 19:13
58.34 49.83
14.65  5.57
449 19:14
63.35 49.70
15.92  5.55
450 19:15
53.90 50.00
13.52  5.60
451 19:16
61.29 50.09
15.40  5.62
452 19:17
55.82 49.73
14.01  5.56
453 19:18
63.07 49.87
15.85  5.50
454 19:19
```

```
 14.59  5.34
 455 19:20
 54.94 49.65
 13.78  5.54
19:43
 0  02    0.78
 1 CO2    3.12
19:44
 0  02    0.75
 1 CO2    2.54
19:45
 0  02    0.65
 1 CO2    2.15
19:46
 0  02    0.62
 1 CO2    1.96
19:47
 0  02    0.62
 1 CO2    1.82
19:48
 0  02    0.61
 1 CO2    1.75
19:49
 0  02    0.60
 1 CO2    1.67
19:50
 0  02    0.55
 1 CO2    1.66
19:51
 0  02    0.54
 1 CO2    1.62
19:52
 0  02    0.53
 1 CO2    1.60
19:52              IN ZERO
 0  02    0.53
 1 CO2    1.60
20:12
 0  02   45.42
 1 CO2   65.32
20:13
 0  02   49.16
 1 CO2   72.90
20:14
 0  02   49.67
 1 CO2   72.92
20:15
 0  02   50.11
 1 CO2   72.93
20:16
 0  02   50.50
 1 CO2   72.92
20:17
 0  02   51.00
 1 CO2   72.90
20:18
 0  02   51.37
 1 CO2   72.91
20:19
 0  02   51.67
 1 CO2   72.88
20:20
 0  02   52.11
 1 CO2   72.03
20:21
 0  02   52.37
 1 CO2   72.93
20:22
 0  02   52.80
 1 CO2   72.94
20:23
 0  02   57.04
 1 CO2   72.90
20:24
 0  02   48.18
 1 CO2   75.79
20:25
 0  02   47.39
 1 CO2   77.56
20:26
 0  02   47.13
 1 CO2   77.65
20:27
 0  02   46.91
 1 CO2   77.69
20:28
 0  02   46.83
 1 CO2   77.70
20:29
 0  02   46.72
 1 CO2   77.69
20:30
 0  02   46.69
 1 CO2   77.74
20:31
 0  02   46.63
 1 CO2   77.72
20:31              FIN SPAN
 0  02   46.63     12.09
 1 CO2   77.72     12.00
```

final UK
chk oK

MR3AMID

TIME		O2 (%)	CO2 (%)
1116	11.27	5.49	12.35
1117	11.28	6.62	12.17
1118	11.30	10.10	11.67
1119	11.32	9.40	11.38
1120	11.33	7.73	10.74
1121	11.35	8.42	11.60
1122	11.37	8.66	10.95
1123	11.38	6.26	10.60
1124	11.40	6.28	12.00
1125	11.42	5.81	12.18
1126	11.43	7.16	12.11
1127	11.45	7.82	11.17
1128	11.47	7.82	11.79
1129	11.48	7.60	11.80
1130	11.50	6.60	11.99
1131	11.52	7.54	11.96
1132	11.53	8.22	11.69
1133	11.55	9.03	11.66
1134	11.57	6.89	11.81
1135	11.58	7.64	11.00
1136	11.60	7.71	11.07
1137	11.62	6.72	11.95
1138	11.63	7.95	11.89
1139	11.65	7.78	11.77
1140	11.67	8.09	11.61
1141	11.68		
1159	11.98		
1200	12.00	8.52	11.44
1201	12.02	8.07	10.95
1202	12.03	6.78	11.80
1203	12.05	7.10	11.88
1204	12.07	7.75	11.87
1205	12.08	7.99	11.81
1206	12.10	7.30	11.86
1207	12.12	7.40	11.81
1208	12.13	8.53	11.75
1209	12.15	7.49	11.75
1210	12.17	6.98	11.83
1211	12.18	7.90	11.83
1212	12.20	7.39	11.84
1213	12.22	7.76	11.83
1214	12.23	7.45	11.84
1215	12.25	8.03	11.80
1216	12.27	7.64	11.31
1217	12.28	7.61	11.82
1218	12.30	7.20	11.89
1219	12.32	8.12	11.83
1220	12.33	7.98	11.72
1221	12.35	8.10	11.74
1222	12.37	8.45	11.61
1223	12.38	8.57	11.54
1224	12.40	7.69	11.68

MR3AMID

TIME		O2 (%)	CO2 (%)
1225	12.42	6.69	11.84
1226	12.43	7.19	11.85
1227	12.45	7.05	11.88
1228	12.47	7.53	11.77
1229	12.48	7.97	11.72
1230	12.50	7.65	11.70
1231	12.52	8.16	11.65
1232	12.53	7.21	11.74
1233	12.55	8.34	11.71
1234	12.57	6.51	11.83
1235	12.58	5.89	12.03
1236	12.60	6.69	12.06
1237	12.62	6.28	12.10
1238	12.63	6.92	12.04
1239	12.65	6.32	11.40
1240	12.67	6.85	11.97
1241	12.68	6.76	12.07
1242	12.70	6.77	10.47
1243	12.72	6.32	12.02
1244	12.73	8.31	11.74
1245	12.75	9.29	11.52
1246	12.77	10.54	11.14
1247	12.78	10.44	10.92
1248	12.80	7.69	11.51
1249	12.82	7.03	11.82
1250	12.83	8.38	11.73
1251	12.85	8.19	11.61
1252	12.87	8.36	11.59
1253	12.88	7.21	11.73
1254	12.90	7.46	11.84
1255	12.92	7.15	11.90
1256	12.93	7.09	11.97
1257	12.95	6.78	12.04
1258	12.97	7.84	11.90
1259	12.98	8.39	11.73
1300	13.00	8.52	11.61
1301	13.02	7.77	11.79
1302	13.03	7.95	11.80
1303	13.05	7.15	11.95
1304	13.07	7.60	11.87
1305	13.08	7.78	11.83
1306	13.10	7.58	11.88
1307	13.12	6.85	12.01
1308	13.13	7.49	11.91
1309	13.15	7.74	11.85
1310	13.17	7.66	11.84
1311	13.18	7.36	11.85
1312	13.20	7.59	11.90
1313	13.22	8.22	11.75
1314	13.23	9.30	11.47
1315	13.25	9.00	11.53
1316	13.27	8.82	11.57
1317	13.28	8.55	11.66

MR3AMID

TIME		O2 (%)	CO2 (%)
1318	13.30	8.69	11.64
1319	13.32	8.12	11.72
1320	13.33	8.16	11.76
1321	13.35	7.50	11.88
1322	13.37	6.42	12.11
1323	13.38	5.92	12.22
1324	13.40	5.36	12.29
1325	13.42	6.18	12.21
1326	13.43	7.12	12.04
1327	13.45	7.61	11.92
1328	13.47	7.66	11.90
1329	13.48	8.44	11.73
1330	13.50		
1344	13.73		
1345	13.75	7.33	11.83
1346	13.77	7.77	11.85
1347	13.78	8.67	11.66
1348	13.80	9.26	11.49
1349	13.82	9.57	11.38
1350	13.83	9.57	11.39
1351	13.85	9.86	11.26
1352	13.87	9.04	11.49
1353	13.88	8.79	11.60
1354	13.90	7.42	11.85
1355	13.92	7.18	12.00
1356	13.93	7.30	11.97
1357	13.95	7.06	12.04
1358	13.97	7.65	11.92
1359	13.98	7.80	11.90
1400	14.00	8.06	11.80
1401	14.02	8.10	11.77
1402	14.03	8.81	11.62
1403	14.05	8.97	11.57
1404	14.07	7.73	11.84
1405	14.08	8.06	11.80
1406	14.10	10.48	11.13
1407	14.12	9.21	11.44
1408	14.13	8.33	11.66
1409	14.15	6.37	12.07
1410	14.17	5.87	12.20
1411	14.18	6.99	12.02
1412	14.20	8.59	11.67
1413	14.22	8.83	11.57
1414	14.23	8.12	11.69
1415	14.25	7.99	11.77
1416	14.27	8.15	11.74
1417	14.28	7.91	11.71
1418	14.30	7.59	11.74
1419	14.32	7.50	11.81
1420	14.33	8.77	11.62
1421	14.35	9.41	11.42
1422	14.37	9.08	11.46
1423	14.38	7.36	11.79

MR3AMID

TIME		O2 (%)	CO2 (%)
1424	14.40	5.84	12.13
1425	14.42	5.44	12.25
1426	14.43	6.47	12.11
1427	14.45	6.31	12.15
1428	14.47	6.40	12.17
1429	14.48	7.41	11.96
1430	14.50	7.03	11.99
1431	14.52	6.29	12.13
1432	14.53	6.58	12.10
1433	14.55	6.79	12.04
1434	14.57	6.89	12.04
1435	14.58	6.54	12.10
1436	14.60	6.84	12.07
1437	14.62	7.27	11.97
1438	14.63	8.26	11.75
1439	14.65	8.31	11.69
1440	14.67	7.66	11.84
1441	14.68	7.62	11.87
1442	14.70	7.40	11.90
1443	14.72	7.85	11.82
1444	14.73	8.96	11.55
1445	14.75	9.22	11.45
1446	14.77	8.53	11.62
1447	14.78	8.18	11.71
1448	14.80	7.28	11.91
1449	14.82	6.49	12.11
1450	14.83	6.32	12.15
1451	14.85	7.13	12.00
1452	14.87	7.26	11.95
1453	14.88	6.63	12.08
1454	14.90	6.57	12.08
1455	14.92	6.75	12.06
1456	14.93	6.36	12.12
1457	14.95	6.94	12.03
1458	14.97	7.57	11.87
1459	14.98	8.57	11.64
1500	15.00	9.33	11.40
1501	15.02	9.35	11.38
1502	15.03	9.82	11.23
1503	15.05	9.69	11.27
1504	15.07	9.28	11.37
1505	15.08	8.55	11.58
1506	15.10	7.23	11.91
1507	15.12	7.28	11.91
1508	15.13	7.21	11.92
1509	15.15	6.74	12.01
1510	15.17	7.50	11.85
1511	15.18	7.96	11.73
1512	15.20	8.32	11.63
1513	15.22	8.14	11.68
1514	15.23	8.28	11.66
1515	15.25	8.44	11.60
1516	15.27	9.00	11.44

MR3AMID

TIME		O2 (%)	CO2 (%)
1517	15.28	8.84	11.49
1518	15.30	8.17	11.70
1519	15.32	6.73	11.70
1520	15.33	7.03	11.97
1521	15.35	5.79	11.79
1522	15.37	7.09	11.90
1523	15.38	7.18	11.85
1524	15.40	10.03	10.82
1525	15.42	15.01	7.72
1529	15.48		
1814	18.23		
1815	18.25	8.27	11.93
1816	18.27	7.26	11.98
1817	18.28	6.85	12.06
1818	18.30	6.84	12.11
1819	18.32	7.50	12.11
1820	18.33	8.62	11.98
1821	18.35	8.67	11.93
1822	18.37	9.63	11.89
1823	18.38	11.85	11.62
1824	18.40	8.46	11.53
1825	18.42	7.44	11.65
1826	18.43	6.47	11.85
1827	18.45	8.59	11.89
1828	18.47	8.67	11.83
1829	18.48	9.59	11.72
1830	18.50	11.28	11.34
1831	18.52	9.00	11.49
1832	18.53	7.00	11.83
1833	18.55	6.57	12.03
1834	18.57	8.15	11.89
1835	18.58	9.59	11.57
1836	18.60	13.10	10.76
Average=		7.83	11.74
Min=		5.36	7.72
Max=		15.01	12.35
Std Dev=		1.21	.40
Variance=		1.47	.16

```
MR3AOUT
RUN #3A MERC OUTLET
12-12-1987
MERC OUTLET
8910-L02-12
GWS
               0          1         2        3
         O2       CO2      SO2       NOx
08:02           1.05      0.75      2.35      2.20
08:03           0.92      0.95      2.49      2.24
08:04           0.84      0.96      2.43      2.08
08:05           0.83      1.03      2.42      2.06
08:06           0.84      1.00      2.44      1.99
08:07           0.85      1.02      2.41      2.03
08:08           0.92      0.99      2.40      1.99
08:09           0.97      1.12      2.38      1.96
08:10           0.98      1.08      2.44      1.97
08:11           1.00      1.03      2.45      1.98
08:12           0.99      1.03      2.42      1.99
08:13           0.98      1.00      2.44      1.97
08:14           0.97      1.02      2.45      1.94
08:15           0.92      0.98      2.44      1.94
08:15 INIT. ZERO
 0   O2    0.92
 1   CO2   0.98
 2   SO2   2.44
 3   NOx   1.94
08:20           0.96      1.02     66.31      1.88
08:21           0.81      1.00     70.14      1.86
08:22           0.77      1.02     73.61      1.79
08:23           0.73      0.98     75.57      1.78
08:24           0.73      1.08     77.01      1.80
08:25           0.70      1.03     77.97      1.72
08:26           0.69      1.00     78.73      1.74
08:27           0.66      1.10     79.35      1.70
08:28           0.63      1.03     79.79      1.69
08:29           0.61      1.01     80.14      1.70
08:30           0.57      1.06     80.38      1.68
08:31           0.57      1.00     80.66      1.72
08:32           0.56      1.05     80.93      1.69
08:33           0.54      0.94     81.11      1.68
08:34           0.52      1.09     81.29      1.65
08:35           0.52      0.98     81.45      1.66
08:36           0.50      0.97     81.53      1.67
08:37           0.49      1.05     81.58      1.65
08:38           0.47      1.06     81.61      1.67
08:38 INIT. SPAN
 2  SO2   81.61      93.10
08:43           0.49      1.01     12.67     48.05
08:44           0.47      0.98     11.39     48.98
08:45           0.46      1.00     10.19     49.19
08:46           0.45      1.04      9.46     48.98
08:47           0.44      1.00      8.93     48.73
08:48           0.43      1.02      8.51     48.54
08:49           0.43      1.00      8.21     48.55
08:49 INIT. SPAN
 3  NOx   48.55     107.80
08:53          46.48     81.63      5.70     48.84
08:54          46.66     81.88      5.12     23.77
08:55          46.86     82.03      4.58      5.52
08:56          46.60     82.14      4.18      2.11
08:57          46.27     82.02      3.97      1.80
08:58          46.15     82.03      3.78      1.74
```

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08:59          46.08     81.98      3.70      1.72
09:00          46.06     82.05      3.58      1.70
09:01          46.07     82.08      3.44      1.69
09:02          46.08     82.00      3.40      1.71
09:02 INIT. SPAN
 0   O2  46.08      12.09
 1  CO2  82.00      12.00

09:29   34.61    75.60    11.50    76.33
09:29    9.02    10.41     10.7    172.0

09:30   33.19    77.07    11.73    75.92
09:30    8.64    10.76     10.9    171.1

09:31   38.05    72.10    11.51    89.03
09:31    9.94     9.58     10.7    201.4

09:32   38.15    71.96    11.59    98.50
09:32    9.97     9.55     10.8    223.3

09:33   39.39    70.43    11.60    92.62
09:33   10.30     9.20     10.8    209.7

09:34   34.95    75.20    12.03    93.78
09:34    9.11    10.31     11.3    212.4

09:35   33.55    76.62    12.24    93.84
09:35    8.74    10.65     11.5    212.5

09:36   37.21    72.59    11.85   100.57
09:36    9.72     9.69     11.1    228.1

09:37   39.45    69.99    11.90    97.38
09:37   10.31     9.10     11.1    220.7

09:38   43.13    65.40    11.94    87.93
09:38   11.30     8.09     11.2    198.9

09:39   42.44    65.90    12.64    83.01
09:39   11.11     8.20     12.0    187.5

09:40   43.94    63.67    25.29    79.18
09:40   11.52     7.73     26.9    178.6

09:41   43.51    63.05    26.68    77.89
09:41   11.40     7.60     28.5    175.7

09:42   44.13    61.81    21.38    77.18
09:42   11.57     7.35     22.3    174.0

09:43   47.60    56.72    18.85    76.04
09:43   12.50     6.35     19.3    171.4

09:44   49.60    53.33    17.29    73.12
09:44   13.03     5.73     17.5    164.6

09:45   50.70    51.10    16.19    66.71
09:45   13.33     5.33     16.2    149.8

09:46   55.74    41.63    14.61    65.48
09:46   14.68     3.81     14.3    147.0

09:47   58.31    36.79    13.50    58.66
09:47   15.37     3.13     13.0    131.2

09:48   57.92    37.45    13.06    47.14
09:48   15.26     3.21     12.5    104.5

09:49   57.97    37.14    12.68    41.97
09:49   15.27     3.17     12.0     92.6

09:50   58.58    35.42    12.27    41.76
09:50   15.44     2.94     11.6     92.1

09:51   57.51    37.25    12.15    39.53
09:51   15.15     3.19     11.4     86.9

09:52   58.09    35.93    11.80    40.06
09:52   15.31     3.01     11.0     88.2

09:53   58.65    34.41    11.36    39.11
```

09:53	15.46	2.81	10.5	86.0
09:54	59.33	32.77	10.92	38.46
09:54	15.64	2.61	10.0	84.5
09:55	58.06	35.21	10.84	35.39
09:55	15.30	2.92	9.9	77.4
09:56	58.24	34.68	10.65	35.19
09:56	15.35	2.85	9.7	76.9
09:57	57.80	35.40	10.61	36.78
09:57	15.23	2.94	9.6	80.6
09:58	58.37	33.94	10.47	36.66
09:58	15.38	2.75	9.4	80.3
09:59	58.30	33.97	10.46	35.85
09:59	15.36	2.76	9.4	78.4
10:00	58.83	32.59	10.34	36.49
10:00	15.51	2.58	9.3	79.9
10:01	56.00	38.41	10.86	35.15
10:01	14.75	3.35	9.9	76.8
10:02	55.20	39.88	11.28	35.59
10:02	14.53	3.55	10.4	77.8
10:03	54.38	41.41	11.61	41.45
10:03	14.31	3.78	10.8	91.4
10:04	56.09	38.21	11.62	44.41
10:04	14.77	3.32	10.8	98.2
10:05	57.02	36.66	12.10	44.33
10:05	15.02	3.11	11.4	98.0
10:06	58.90	33.10	12.05	41.63
10:06	15.52	2.65	11.3	91.8
10:07	60.79	29.24	11.34	37.81
10:07	16.03	2.18	10.5	83.0
10:08	61.16	28.98	10.61	32.64
10:08	16.13	2.16	9.6	71.0
10:09	60.70	30.59	10.37	26.33
10:09	16.00	2.34	9.3	61.0
10:10	61.36	29.52	10.13	30.22
10:10	16.18	2.22	9.0	65.4
10:11	61.63	29.39	9.83	31.06
10:11	16.26	2.20	8.7	67.4
10:12	60.63	32.14	9.75	29.88
10:12	15.99	2.53	8.6	64.6
10:13	61.42	30.93	9.54	31.80
10:13	16.20	2.38	8.3	69.1
10:14	61.38	31.58	9.52	32.14
10:14	16.19	2.46	8.3	69.8
10:15	61.55	31.67	9.45	31.58
10:15	16.23	2.47	8.2	68.6
10:16	62.71	29.65	9.25	31.22
10:16	16.54	2.23	8.0	67.7
10:17	63.58	28.34	9.12	30.34
10:17	16.78	2.08	7.9	65.7
10:18	63.24	29.50	9.05	28.61
10:18	16.69	2.21	7.8	61.7
10:19	63.77	28.78	8.86	27.92
10:19	16.83	2.13	7.5	60.1
10:20	65.14	26.85	8.64	28.54
10:20	17.19	1.92	7.3	61.5
10:21	67.77	23.33	8.33	27.85
10:21	17.90	1.56	6.9	59.9
10:22	66.31	26.55	8.50	23.59
10:22	17.51	1.89	7.1	50.1
10:23	65.12	29.25	8.87	22.83
10:23	17.19	2.19	7.6	48.3
10:24	64.53	30.46	9.44	26.31
10:24	17.03	2.33	8.2	56.4
10:25	65.48	28.37	9.54	29.16
10:25	17.28	2.09	8.3	63.0
10:26	67.18	24.89	9.06	29.72
10:26	17.74	1.71	7.8	64.3
10:27	67.44	24.45	8.46	26.59
10:27	17.81	1.67	7.1	57.0
10:28	62.56	34.83	9.13	23.00
10:28	16.50	2.87	7.9	48.7
10:29	62.63	34.64	9.84	26.56
10:29	16.52	2.84	8.7	56.9
10:30	63.48	32.85	9.89	34.30
10:30	16.75	2.61	8.8	74.8
10:31	62.28	35.31	9.97	33.98
10:31	16.43	2.93	8.9	74.1
10:32	61.52	36.68	10.18	32.68
10:32	16.22	3.11	9.1	71.1
10:33	61.01	37.87	10.47	34.16
10:33	16.09	3.27	9.4	74.5
10:34	60.60	39.40	10.95	35.71
10:34	15.98	3.49	10.0	78.1
10:35	59.98	40.63	11.49	36.63
10:35	15.81	3.66	10.6	80.2
10:36	60.86	38.89	11.47	37.43
10:36	16.05	3.41	10.5	82.1
10:37	58.11	43.85	11.83	37.27
10:37	15.31	4.14	11.0	81.7
10:38	55.85	47.84	12.30	37.27
10:38	14.71	4.78	11.6	81.7
10:39	53.38	51.96	12.46	42.82
10:39	14.05	5.48	11.8	94.5
10:40	50.00	57.22	12.50	47.95
10:40	13.14	6.45	11.8	106.4
10:41	48.11	59.94	12.09	52.60
10:41	12.63	6.97	11.3	117.2
10:42	44.82	64.13	11.95	58.66
10:42	11.75	7.83	11.2	131.2
10:43	41.56	67.78	11.80	64.28
10:43	10.88	8.61	11.0	144.2
10:44	34.75	75.05	12.45	72.98
10:44	9.06	10.28	11.8	164.3
10:45	35.01	74.75	12.37	82.72
10:45	9.13	10.20	11.7	186.8
10:46	33.90	76.01	13.44	94.22
10:46	8.83	10.50	12.9	213.4
10:47	30.05	79.90	14.98	92.33
10:47	7.80	11.46	14.7	209.0

```
10:48   26.14   83.24   15.04    95.83
10:48    6.75   12.32    14.8   217.1

10:49   30.25   80.58   13.55   100.47
10:49    7.85   11.64    13.1   227.9

10:50   31.35   79.77   12.76    99.79
10:50    8.15   11.43    12.1   226.3

10:51   30.08   80.80   12.56    90.46
10:51    7.81   11.69    11.9   204.7

10:52   30.17   80.76   12.33    87.95
10:52    7.83   11.68    11.6   198.9

10:53   33.31   77.89   12.10    89.67
10:53    8.67   10.96    11.4   202.9

10:54   30.08   80.83   12.40    89.24
10:54    7.81   11.70    11.7   201.9

10:55   29.43   81.62   12.57    91.82
10:55    7.63   11.90    11.9   207.9

10:56   32.78   78.60   13.09   100.71
10:56    8.53   11.14    12.5   228.4

10:57   32.88   78.40   12.84   101.30
10:57    8.56   11.09    12.2   229.8

10:58   30.32   80.89   12.73    99.11
10:58    7.87   11.72    12.1   224.7

10:59   29.17   82.03   13.02    98.65
10:59    7.56   12.01    12.4   223.7

11:00   29.13   82.16   12.79    98.81
11:00    7.55   12.04    12.2   224.0

11:01   30.22   81.21   12.53    99.74
11:01    7.84   11.80    11.9   226.2

11:02   32.76   78.79   12.72    98.51
11:02    8.52   11.19    12.1   223.3

11:03   31.10   80.07    9.31    96.41
11:03    8.08   11.51     8.1   218.5

11:04   27.24   83.61   12.49    95.63
11:04    7.05   12.42    11.8   216.7

11:05   26.20   84.60   12.75    99.31
11:05    6.77   12.68    12.1   225.2

11:06   23.56   86.75   12.91   102.97
11:06    6.06   13.26    12.3   233.6

11:07   24.77   85.80   12.92   104.83
11:07    6.39   13.00    12.3   238.0

11:08   25.88   84.87   12.94   106.42
11:08    6.68   12.75    12.3   241.6

11:09   21.72   88.12   13.08   108.62
11:09    5.57   13.63    12.5   246.7

11:10   22.95   87.22   13.20   111.09
11:10    5.90   13.38    12.6   252.4

11:11   35.44   75.84   11.92   112.87
11:11    9.24   10.46    11.1   256.6

11:12   32.02   79.45   11.93   108.61
11:12    8.33   11.35    11.2   246.7

11:13   33.10   78.27   11.88    92.95
11:13    8.62   11.06    11.1   210.5

11:14   29.88   80.80   11.97    99.15
11:14    7.75   11.69    11.2   224.8

11:15   20.10   89.11   12.88    91.20
11:15    5.14   13.90    12.3   206.4

11:16   20.26   89.02   13.29   102.68
11:16    5.18   13.88    12.8   233.0

11:17   25.50   85.12   13.96   107.98    ← START
11:17    6.58   12.82    13.5   245.2       34

11:18   31.65   79.72   14.92   107.97
11:18    8.23   11.42    14.7   245.2

11:19   40.98   70.45   15.20   107.08
11:19   10.73    9.20    15.0   243.2

11:20   36.22   75.44   15.72    92.46
11:20    9.45   10.37    15.6   209.3

11:21   34.84   76.66   17.10    84.50
11:21    9.08   10.66    17.2   190.9

11:22   36.10   75.24   18.27    88.53
11:22    9.42   10.32    18.6   200.3

11:23   32.72   78.42   18.69    89.20
11:23    8.51   11.10    19.1   201.8

11:24   26.11   84.34   18.18    90.56
11:24    6.74   12.61    18.5   205.0

11:25   23.81   86.19   17.27    98.27
11:25    6.13   13.10    17.4   222.8

11:26   27.34   83.52   16.44   101.11
11:26    7.07   12.40    16.5   229.4

11:27   32.50   78.84   15.66    99.76
11:27    8.45   11.20    15.5   226.2

11:28   32.71   78.64   15.81    93.56
11:28    8.51   11.15    15.7   211.9

11:29   32.18   79.11   16.70    87.20
11:29    8.37   11.27    16.8   197.2

11:30   27.05   83.75   18.74    87.82
11:30    7.00   12.46    19.2   198.6

11:31   30.40   81.03   20.21    93.40
11:31    7.89   11.75    20.9   211.5

11:32   36.02   75.87   19.84    95.86
11:32    9.40   10.47    20.5   217.2

11:33   35.40   76.65   19.14    89.29
11:33    9.23   10.66    19.6   202.0

11:34   31.70   80.35   18.26    84.71
11:34    8.24   11.58    18.6   191.4

11:35   32.27   79.82   17.33    85.98
11:35    8.39   11.45    17.5   194.4

11:36   31.31   80.76   16.37    90.31
11:36    8.14   11.68    16.4   204.4

11:37   29.72   82.12   15.57    92.78
11:37    7.71   12.03    15.4   210.1

11:38   31.94   79.82   14.65    91.98          Stop 1139
11:38    8.31   11.45    14.4   208.2

11:39   33.93   77.69   13.68    90.85
11:39    8.84   10.91    13.2   205.6

11:40   34.96   75.66   12.68    87.66
11:40    9.11   10.42    12.0   198.3

11:41   31.87   77.99   12.55    80.37
11:41    8.29   10.99    11.9   181.4

11:42   28.72   80.42   12.65    78.38
```

```
11:42    7.44  11.60   12.0  176.8
11:43   24.40  83.92  12.49  84.00
11:43    6.29  12.50   11.8  189.8
11:44   32.64  76.80  11.48  89.59
11:44    8.49  10.70   10.6  202.7
11:45   45.34  62.43   9.90  86.88
11:45   11.89   7.47    8.8  196.4
11:46   49.97  54.40   9.37  71.22
11:46   13.13   5.92    8.1  160.2
11:47   35.26  70.61  10.94  53.82
11:47    9.19   9.24   10.0  120.0
11:48   28.83  78.82  11.96  54.37
11:48    7.47  11.19   11.2  121.3
11:49   27.74  80.71  11.95  74.49
11:49    7.18  11.67   11.2  167.8
11:50   29.70  79.32  12.24  88.29
11:50    7.71  11.32   11.5  199.7
11:51   34.91  74.47  12.00  90.25
11:51    9.10  10.14   11.2  204.2
11:52   38.56  70.71  11.66  92.28
11:52   10.08   9.26   10.8  208.9
11:53   41.01  67.93  11.27  89.24
11:53   10.73   8.64   10.4  201.9
11:54   39.05  70.05  11.23  84.74
11:54   10.21   9.11   10.3  191.5
11:55   38.00  71.11  11.53  81.90
11:55    9.93   9.35   10.7  184.9
11:56   37.36  71.89  11.45  82.81
11:56    9.76   9.53   10.6  187.0
11:57   40.12  70.08  10.93  85.69
11:57   10.49   9.12   10.0  193.7
11:58   38.65  71.84  10.97  82.85
11:58   10.10   9.52   10.0  187.1
11:59   37.00  73.74  11.08  77.82
11:59    9.66   9.96   10.2  175.5
12:00   36.29  74.55  11.13  79.21
12:00    3.47  10.16   10.2  178.7
12:01   34.74  76.15  11.33  81.32
12:01    9.06  10.54   10.5  183.6
12:02   30.43  80.33  12.20  83.26
12:02    7.90  11.58   11.5  188.1
12:03   29.16  81.61  12.78  88.98
12:03    7.56  11.90   12.2  201.3
12:04   30.64  80.32  12.86  99.08
12:04    7.96  11.57   12.2  224.7
12:05   32.38  78.69  12.78 101.76
12:05    8.42  11.16   12.2  230.9
12:06   30.24  80.69  12.90  99.37
12:06    7.85  11.66   12.3  225.3
12:07   31.77  79.21  12.81  97.93
12:07    8.26  11.29   12.2  222.0
12:08   33.20  77.67  12.60  99.29
12:08    8.64  10.91   11.9  225.1
12:09   32.29  78.59  12.32  97.06
12:09    8.40  11.14   11.6  220.0
```

← 12:00 RESTART

```
12:10   30.70  80.07  12.44  94.58
12:10    7.97  11.51   11.8  214.3
12:11   30.60  80.30  12.83  92.92
12:11    7.95  11.57   12.2  210.4
12:12   31.34  79.55  12.81  95.57
12:12    8.15  11.38   12.2  216.5
12:13   31.01  79.88  12.69 102.19
12:13    8.06  11.46   12.0  231.9
12:14   31.27  79.60  12.64 103.29
12:14    8.13  11.39   12.0  234.4
12:15   31.98  78.76  12.48 100.50
12:15    8.32  11.18   11.8  228.0
12:16   30.67  79.99  12.62  99.47
12:16    7.96  11.49   12.0  225.6
12:17   31.40  79.23  12.71  98.10
12:17    8.16  11.30   12.1  222.4
12:18   29.33  81.22  12.90  98.65
12:18    7.61  11.80   12.3  223.7
12:19   31.38  79.24  12.77  98.84
12:19    8.16  11.30   12.1  224.1
12:20   33.20  77.45  12.37 100.11
12:20    8.64  10.85   11.7  227.0
12:21   32.01  78.45  12.22  95.42
12:21    8.32  11.10   11.5  216.2
12:22   34.61  75.76  11.71  91.97
12:22    9.02  10.44   10.9  208.2
12:23   35.53  74.79  11.21  90.81
12:23    9.27  10.21   10.3  205.5
12:24   32.11  78.17  11.51  83.11
12:24    8.35  11.03   10.7  187.7
12:25   29.36  80.79  11.81  81.49
12:25    7.61  11.69   11.0  184.0
12:26   30.22  80.02  11.81  89.08
12:26    7.85  11.50   11.0  201.5
12:27   29.21  80.97  11.74  91.74
12:27    7.57  11.74   10.9  207.7
12:28   32.08  78.15  11.40  93.34
12:28    8.34  11.03   10.5  211.4
12:29   33.08  77.26  11.35  92.05
12:29    8.61  10.81   10.5  208.4
12:30   32.36  78.06  11.36  87.31
12:30    8.42  11.01   10.5  197.4
12:31   33.96  76.58  11.32  86.30
12:31    8.84  10.64   10.4  195.1
12:32   31.95  78.72  11.57  86.18
12:32    8.31  11.17   10.7  194.8
12:33   33.01  77.51  11.66  86.79
12:33    8.59  10.87   10.8  196.2
12:34   29.84  80.61  12.06  91.46
12:34    7.74  11.64   11.3  207.0
12:35   26.88  83.32  12.44  90.46
12:35    6.95  12.34   11.8  204.7
12:36   26.13  83.90  12.52  98.59
12:36    6.75  12.49   11.8  223.5
```

```
[illegible]
12:37    6.66   12.58    11.8   233.6

12:38   27.74   82.49   12.22  101.36
12:38    7.18   12.13    11.5   229.9

12:39   28.66   81.76   11.74   99.98
12:39    7.43   11.94    10.9   226.7

12:40   29.07   81.46   11.67   96.55
12:40    7.54   11.86    10.8   218.8

12:41   26.90   83.44   11.99   92.00
12:41    6.96   12.38    11.2   208.3

12:42   27.59   82.93   12.04   93.93
12:42    7.14   12.24    11.3   212.7

12:43   26.76   83.56   12.10   97.32
12:43    6.92   12.41    11.4   220.6

12:44   30.65   79.98   11.74   98.90
12:44    7.96   11.49    10.9   224.2

12:45   35.26   75.35   11.31   96.54
12:45    9.19   10.35    10.4   218.8

12:46   39.04   71.24   10.93   92.14
12:46   10.21    9.38    10.0   208.6

12:47   43.19   66.31   10.47   86.32
12:47   11.32    8.29     9.4   195.2

12:48   38.63   71.62   10.87   80.11
12:48   10.09    9.47     9.9   180.8

12:49   32.25   78.27   11.55   77.61
12:49    8.39   11.06    10.7   175.0

12:50   30.87   79.62   11.64   86.07
12:50    8.02   11.40    10.8   194.6

12:51   33.97   76.52   11.28   93.81
12:51    8.85   10.63    10.4   212.5

12:52   34.55   75.94   11.24   93.29
12:52    9.00   10.49    10.3   211.3

12:53   33.32   77.17   11.38   91.04
12:53    8.67   10.79    10.5   206.1

12:54   30.67   79.75   11.46   92.38
12:54    7.97   11.43    10.6   209.2

12:55   29.99   80.48   11.51   95.07
12:55    7.78   11.61    10.7   215.4

12:56   28.51   81.89   11.68   96.26
12:56    7.39   11.97    10.9   218.1

12:57   27.92   82.44   11.80   96.80
12:57    7.23   12.12    11.0   219.4

12:58   29.00   81.42   11.64   98.01
12:58    7.52   11.85    10.8   222.2

12:59   32.00   78.62   11.54   98.21
12:59    8.32   11.14    10.7   222.6

13:00   33.85   76.74   11.38   95.90
13:00    8.82   10.68    10.5   217.3

13:01   32.56   78.14   11.47   93.89
13:01    8.47   11.03    10.6   212.7

13:02   31.24   79.52   11.78   93.05
13:02    8.12   11.37    11.0   210.7

13:03   29.48   81.21   11.98   95.23
13:03    7.65   11.80    11.2   215.8

13:04   29.15   81.65   12.00   98.83
```

```
13:04    7.56   11.91    11.2   224.1

13:05   31.22   79.80   11.84  100.10
13:05    8.11   11.44    11.0   227.0

13:06   30.90   80.03   11.95   97.93
13:06    8.03   11.50    11.2   222.0

13:07   28.94   81.91   12.04   96.28
13:07    7.50   11.98    11.3   218.2

13:08   28.49   82.26   12.06   98.65
13:08    7.38   12.07    11.3   223.7

13:09   30.59   80.14   12.01  100.69
13:09    7.94   11.53    11.2   228.4

13:10   30.89   79.72   11.99  101.28
13:10    8.02   11.42    11.2   229.8

13:11   30.29   80.21   11.91  100.62
13:11    7.86   11.54    11.1   228.2

13:12   29.57   80.91   11.83   99.35
13:12    7.67   11.72    11.0   225.3

13:13   31.16   79.41   11.55   98.90
13:13    8.10   11.34    10.7   224.2

13:14   35.06   75.59   11.24   97.85
13:14    9.14   10.40    10.3   221.8

13:15   36.37   74.37   10.94   93.80
13:15    9.49   10.11    10.0   212.5

13:16   35.25   75.53   11.04   90.12
13:16    9.19   10.39    10.1   203.9

13:17   33.55   77.37   11.07   88.27
13:17    8.74   10.84    10.1   199.7

13:18   33.87   76.88   11.07   90.34
13:18    8.82   10.72    10.1   204.4

13:19   33.11   77.63   11.16   91.63
13:19    8.62   10.90    10.3   207.4

13:20   32.47   78.32   11.16   92.93
13:20    8.45   11.07    10.3   210.4

13:21   30.91   79.71   11.30   93.91
13:21    8.03   11.42    10.4   212.7

13:22   26.83   83.45   11.72   93.90
13:22    6.94   12.38    10.9   212.7

13:23   24.30   85.66   12.00   97.79
13:23    6.26   12.96    11.2   221.7

13:24   22.28   87.19   12.10  103.57
13:24    5.72   13.38    11.4   235.1

13:25   22.46   86.98   12.12  106.57
13:25    5.77   13.32    11.4   242.0

13:26   25.75   84.25   12.15  106.83
13:26    6.65   12.59    11.4   242.6

13:27   29.00   81.45   11.92  104.44
13:27    7.52   11.86    11.1   237.0

13:28   29.21   81.24   11.82  102.92
13:28    7.57   11.81    11.0   233.5

13:29   31.54   79.00   11.52   99.71
13:29    8.20   11.24    10.7   226.1

13:30   32.97   77.68   11.32   98.32
13:30    8.58   10.91    10.4   222.9

13:31   33.98   76.73   11.28   94.58
13:31    8.85   10.68    10.4   214.3
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← start paste 1324

```
13:32   34.84   75.86   11.05   93.13
13:32    9.08   10.47    10.1   210.9

13:33   36.86   73.75   10.72   93.86
13:33    9.62    9.97     9.7   212.6

13:34   36.57   73.99   10.49   89.37
13:34    9.54   10.02     9.5   202.2

13:35   36.65   73.82   10.57   85.68
13:35    9.57    9.98     9.6   193.7

13:36   35.02   75.63   10.57   84.12
13:36    9.13   10.41     9.6   190.1

13:37   32.61   78.01   10.78   86.95
13:37    8.49   10.99     9.8   196.6

13:38   28.46   81.85   11.30   87.29
13:38    7.37   11.96    10.4   197.4

13:39   27.35   82.86   11.50   92.57
13:39    7.06   12.22    10.6   209.6

13:40   28.26   82.06   11.49  101.34
13:40    7.32   12.02    10.6   229.9

13:41   28.84   81.58   11.63  101.80
13:41    7.48   11.89    10.8   231.0

13:42   27.75   82.53   11.95  100.66
13:42    7.18   12.14    11.2   228.3

13:43   26.69   83.47   12.12  102.88
13:43    6.90   12.38    11.4   233.4

13:44   27.49   82.76   12.32  105.69
13:44    7.11   12.20    11.6   239.9

13:45   27.40   82.85   12.50  105.70
13:45    7.09   12.22    11.8   240.0

13:46   29.44   81.05   12.29  108.16
13:46    7.64   11.76    11.6   245.6

13:47   32.14   78.40   12.16  107.11
13:47    8.36   11.09    11.4   243.2

13:48   34.74   75.72   11.94  102.58
13:48    9.05   10.44    11.2   232.8

13:49   37.11   73.24   11.33  100.68
13:49    9.69    9.85    10.4   228.4

13:50   36.28   74.24   11.25   94.49
13:50    9.47   10.08    10.4   214.1

13:51   38.45   71.78   11.03   87.70
13:51   10.05    9.51    10.1   198.3

13:52   36.48   73.95   10.95   88.47
13:52    9.52   10.01    10.0   200.1

13:53   34.17   76.37   11.16   86.06
13:53    8.90   10.59    10.3   194.5

13:54   32.82   77.81   11.23   89.76
13:54    8.54   10.94    10.3   203.1

13:55   27.26   83.16   11.62   92.67
13:55    7.05   12.30    10.8   209.8

13:56   28.83   81.84   11.46   97.51
13:56    7.47   11.96    10.6   221.0

13:57   27.17   83.38   11.40  100.18
13:57    7.03   12.36    10.5   227.2

13:58   29.22   81.45   11.01   99.13
13:58    7.50   11.86    10.1   224.8
```

```
13:59   29.28   81.42   11.02   96.46
13:59    7.59   11.85    10.1   218.6

14:00   31.18   79.47   10.77   91.75
14:00    8.10   11.36     9.8   207.7

14:01   31.33   79.19   10.72   89.38
14:01    8.14   11.29     9.7   202.2

14:02   33.13   77.44   10.45   87.32
14:02    8.62   10.85     9.4   197.5

14:03   35.04   75.71   10.23   85.75
14:03    9.13   10.43     9.2   193.8

14:04   31.69   79.03   10.41   82.15
14:04    8.24   11.25     9.4   185.5

14:05   29.26   81.03   10.59   81.45
14:05    7.59   11.75     9.6   183.9

14:06   37.90   72.17    9.80   85.37
14:06    9.90    9.60     8.7   192.9

14:07   37.27   73.18    9.82   83.68
14:07    9.73    9.83     8.7   189.0

14:08   35.04   75.59   10.15   76.86
14:08    9.14   10.40     9.1   173.3

14:09   28.18   82.21   11.02   77.74
14:09    7.30   12.05    10.1   175.3

14:10   23.93   85.70   11.62   86.72
14:10    6.16   12.97    10.8   196.1

14:11   24.92   85.00   11.78   98.83
14:11    6.43   12.79    11.0   224.1

14:12   30.99   79.54   11.75  104.08
14:12    8.05   11.37    10.9   236.2

14:13   34.59   76.19   11.81  100.45
14:13    9.01   10.55    11.0   227.8

14:14   33.70   77.13   12.29   92.11
14:14    8.78   10.78    11.6   208.5

14:15   30.89   79.69   12.93   86.67
14:15    8.02   11.41    12.3   196.0

14:16   29.02   81.35   13.53   87.04
14:16    7.52   11.84    13.0   196.8

14:17   28.08   82.17   14.14   88.38
14:17    7.27   12.04    13.8   199.9

14:18   31.72   79.07   13.54   91.20
14:18    8.25   11.26    13.1   206.4

14:19   34.20   76.78   12.75   90.53
14:19    8.91   10.69    12.1   204.9

14:20   37.81   73.18   11.66   85.00
14:20    9.88    9.83    10.8   192.1

14:21   37.45   73.33   11.17   78.02
14:21    9.78    9.87    10.3   176.0

14:22   35.98   74.87   11.14   71.87
14:22    9.39   10.23    10.2   161.7

14:23   30.12   80.58   11.86   72.08
14:23    7.82   11.64    11.1   162.2

14:24   23.82   86.09   12.62   79.52
14:24    6.13   13.08    12.0   179.4

14:25   21.72   87.55   12.80   92.76
14:25    5.57   13.48    12.2   210.0

14:26   25.58   84.43   12.82  102.25
```

14:26	6.60	12.64	12.2	232.0	
14:27	26.23	84.05	12.93	101.84	
14:27	6.78	12.53	12.3	231.0	
14:28	23.67	86.28	12.95	98.37	
14:28	6.09	13.13	12.3	223.0	
14:29	27.51	83.18	12.42	97.48	
14:29	7.12	12.31	11.7	221.0	
14:30	29.67	81.04	12.08	95.45	
14:30	7.70	11.75	11.3	216.3	
14:31	25.77	84.36	12.49	89.18	
14:31	6.65	12.62	11.8	201.8	
14:32	25.40	84.61	12.96	89.66	
14:32	6.55	12.68	12.4	202.9	
14:33	27.67	82.72	13.02	98.17	
14:33	7.16	12.19	12.4	222.6	
14:34	26.95	83.40	13.14	105.70	
14:34	6.97	12.36	12.6	240.0	
14:35	26.47	83.93	13.25	108.17	
14:35	6.84	12.50	12.7	245.7	
14:36	26.57	83.99	13.39	109.19	
14:36	6.87	12.52	12.9	248.1	
14:37	28.35	82.41	13.27	109.81	
14:37	7.34	12.11	12.7	249.5	
14:38	30.62	80.28	13.09	109.42	
14:38	7.95	11.56	12.5	248.6	
14:39	33.39	77.57	12.94	103.85	
14:39	8.69	10.89	12.3	235.7	
14:40	32.17	78.67	13.42	97.99	
14:40	8.37	11.16	12.9	222.1	
14:41	29.57	81.04	14.05	94.91	
14:41	7.67	11.75	13.7	215.0	
14:42	30.53	80.22	14.55	98.12	
14:42	7.93	11.55	14.2	222.4	
14:43	30.23	80.39	14.88	101.63	
14:43	7.85	11.59	14.6	230.6	
14:44	32.82	77.83	15.02	101.62	
14:44	8.54	10.95	14.8	230.5	
14:45	36.78	73.88	14.40	96.22	← port change
14:45	9.60	10.00	14.1	218.0	
14:46	35.06	75.75	14.05	90.02	
14:46	9.14	10.44	13.7	203.7	
14:47	33.08	77.73	13.70	91.24	
14:47	8.61	10.92	13.2	206.5	
14:48	31.19	79.43	13.49	98.28	
14:48	8.10	11.35	13.0	222.8	
14:49	27.01	83.27	13.57	101.02	
14:49	6.98	12.33	13.1	229.1	
14:50	25.43	84.75	13.52	106.22	
14:50	6.56	12.72	13.0	241.2	
14:51	26.78	83.47	13.54	111.53	
14:51	6.92	12.38	13.1	253.5	
14:52	28.39	82.08	13.70	111.37	
14:52	7.36	12.02	13.2	253.1	
14:53	27.65	82.74	13.94	107.55	
14:53	7.16	12.19	13.5	244.3	
14:54	26.59	83.72	14.20	108.92	
14:54	6.87	12.45	13.8	247.4	
14:55	26.46	83.71	14.27	110.71	
14:55	6.84	12.45	13.9	251.6	
14:56	26.35	83.94	14.24	113.90	
14:56	6.81	12.51	13.9	258.9	
14:57	26.16	84.18	14.37	110.18	
14:57	6.76	12.57	14.0	250.3	
14:58	28.85	81.69	14.34	110.65	
14:58	7.48	11.92	14.0	251.4	
14:59	31.52	79.20	13.79	110.75	
14:59	8.19	11.29	13.3	251.7	
15:00	34.93	75.55	12.98	108.36	
15:00	9.11	10.39	12.4	246.1	
15:01	37.43	72.82	12.22	101.69	
15:01	9.77	9.75	11.5	230.7	
15:02	37.89	72.30	11.76	95.07	
15:02	9.90	9.63	11.0	215.4	
15:03	38.42	71.76	11.47	88.84	
15:03	10.04	9.50	10.6	201.0	
15:04	37.66	72.52	11.31	84.00	
15:04	9.84	9.70	10.4	189.8	
15:05	36.12	74.15	11.23	84.91	
15:05	9.42	10.06	10.3	191.9	
15:06	31.58	78.80	11.67	86.50	
15:06	8.21	11.19	10.9	195.6	
15:07	28.32	81.79	11.95	89.82	
15:07	7.33	11.95	11.2	203.2	
15:08	29.23	80.91	11.85	100.24	
15:08	7.58	11.72	11.1	227.3	
15:09	27.90	82.08	12.01	100.65	← 1510 and port change
15:09	7.22	12.02	11.2	228.3	
15:10	27.50	82.52	12.05	101.55	
15:10	7.12	12.14	11.3	230.4	
15:11	31.10	79.16	11.68	104.64	
15:11	8.08	11.28	10.9	237.5	
15:12	32.62	77.60	11.55	100.21	
15:12	8.49	10.89	10.7	227.3	
15:13	32.84	77.41	11.54	94.97	
15:13	8.55	10.85	10.7	215.1	
15:14	32.58	77.66	11.57	92.79	
15:14	8.48	10.91	10.7	210.1	
15:15	32.86	77.35	11.62	93.10	
15:15	8.55	10.83	10.8	210.8	
15:16	34.71	75.36	11.40	94.41	
15:16	9.05	10.35	10.5	213.9	
15:17	35.85	74.17	11.15	93.97	
15:17	9.35	10.06	10.2	212.8	
15:18	33.58	76.29	10.30	89.95	
15:18	8.75	10.57	9.2	203.5	
15:19	30.67	79.64	11.08	90.47	
15:19	7.96	11.40	10.2	204.8	
15:20	29.23	81.04	11.88	97.85	
15:20	7.58	11.76	11.1	221.8	

```
15:21   25.34   83.72    8.90  103.74
15:21    6.54   12.45     7.6   235.4

15:22   26.34   83.34   11.25  105.85
15:22    6.81   12.35    10.4   240.3

15:23   27.48   81.65   11.90  108.18
15:23    7.11   11.91    11.1   245.7

15:24   31.62   77.27   11.49  105.78
15:24    8.22   10.81    10.6   240.1

15:25   50.83   50.29    9.01  100.82
15:25   13.36    5.19     7.7   228.7

15:26   64.26   26.50    4.54   80.84
15:26   16.96    1.88     2.5   182.5

15:27   72.25    7.98    3.90   47.55
15:27   19.10    0.37     1.7   105.5

15:28   73.76    4.59    5.48   19.59
15:28   19.50    0.20     3.6    40.8

15:29   73.57    3.62    3.90    7.05
15:29   19.45    0.15     1.7    11.8

15:30   73.64    3.22    4.75    4.05
15:30   19.47    0.14     2.7     4.9

15:31   73.59    2.84    4.50    3.21
15:31   19.46    0.12     2.4     2.9

15:32   73.44    2.70    4.30    2.72
15:32   19.42    0.11     2.2     1.8

15:33   73.30    2.43    4.14    2.41
15:33   19.38    0.10     2.0     1.1

15:34   73.15    2.43    4.00    2.23
15:34   19.34    0.10     1.8     0.7

15:35   71.56    5.29    3.92    2.07
15:35   18.91    0.23     1.7     0.3

15:36   69.11    9.54    3.99    2.47
15:36   18.26    0.46     1.8     1.2

15:37   68.60   10.09    4.03    4.34
15:37   18.12    0.50     1.9     5.5

15:38   68.39   10.25    4.02    6.22
15:38   18.06    0.51     1.9     9.9

15:39   68.16   10.60    4.07    7.02
15:39   18.00    0.53     1.9    11.8

15:40   67.89   10.81    4.04    8.08
15:40   17.93    0.54     1.9    14.2

15:41   67.76   10.86    3.97    8.98
15:41   17.89    0.55     1.8    16.3

15:42   67.63   10.98    4.11    9.28
15:42   17.86    0.55     2.0    17.0

15:43   68.41    9.17    3.97    9.30
15:43   18.07    0.44     1.8    17.0

15:44   71.48    2.94    3.71    8.81
15:44   18.89    0.12     1.5    15.9

17:45   28.49   80.80   11.31   99.82
17:45    7.38   11.69    10.4   226.4

17:46   30.25   79.09   11.05   95.57
17:46    7.85   11.26    10.1   216.5

17:47   34.04   74.92   10.56   91.87
17:47    8.87   10.24     9.5   208.0

17:48   35.35   73.70   10.28   86.68
```

```
17:48    9.22    9.95     9.2   196.0

17:49   33.94   75.28   10.34   78.42
17:49    8.84   10.33     9.3   176.9

17:50   34.47   74.68   10.10   76.03
17:50    8.98   10.19     9.0   171.4

17:51   32.14   77.24   10.26   75.97
17:51    8.36   10.80     9.2   171.2

17:52   31.81   77.50   10.44   76.24
17:52    8.27   10.87     9.4   171.8

17:53   31.75   77.68   10.46   80.24
17:53    8.25   10.91     9.4   181.1

17:54   27.98   81.58   10.95   81.53
17:54    7.25   11.89    10.0   184.1

17:55   25.72   83.76   11.18   85.75
17:55    6.64   12.46    10.3   193.8

17:56   28.32   81.11   10.79   94.20
17:56    7.33   11.77     9.8   213.4

17:57   31.02   78.37   10.34   93.79
17:57    8.06   11.08     9.3   212.4

17:58   31.80   77.58   10.35   87.86
17:58    8.27   10.89     9.3   198.7

17:59   37.54   70.24    9.06   83.33
17:59    9.80    9.16     7.8   188.2

18:00   47.99   55.23    7.46   81.67
18:00   12.60    6.07     5.9   184.4

18:01   37.66   69.59   10.36   66.04
18:01    9.84    9.01     9.3   148.3

18:02   23.04   85.57   12.33   59.67
18:02    5.92   12.94    11.6   133.5

18:03   25.01   83.51   12.08   85.85
18:03    6.45   12.39    11.3   194.1

18:04   27.36   81.48   12.14  105.25
18:04    7.08   11.87    11.4   238.9

18:05   25.64   83.28   11.88  103.18
18:05    6.62   12.33    11.1   234.1

18:06   27.18   81.66    8.27  100.80
18:06    7.03   11.91     6.9   228.6

18:07   26.83   82.23   11.89   97.38
18:07    6.94   12.06    11.1   220.7

18:08   28.50   80.55   12.12   94.85
18:08    7.38   11.63    11.4   214.9

18:09   28.94   80.29   12.17   95.77
18:09    7.50   11.56    11.4   217.0

18:10   29.97   79.27   12.19   95.41
18:10    7.78   11.31    11.5   216.2

18:11   30.58   78.79   12.19   93.18
18:11    7.94   11.19    11.5   211.0

18:12   30.67   78.61   12.08   90.49
18:12    7.97   11.14    11.3   204.8

18:13   27.64   81.70   12.30   90.08
18:13    7.15   11.92    11.6   203.8

18:14   27.23   81.91   12.37   91.32
18:14    7.04   11.98    11.7   206.7

18:15   27.89   81.22   12.27   94.56
18:15    7.22   11.80    11.6   214.2
```

← 1814 restart

```
18:15   24.68   84.29   12.82    94.75
18:16    6.36   12.60    12.2    214.6

18:17   23.36   85.53   13.16    96.65
18:17    6.01   12.93    12.6    219.0

18:18   24.50   84.31   13.11   104.40
18:18    6.31   12.60    12.5    237.0

18:19   26.87   82.17   13.06   107.89
18:19    6.95   12.05    12.5    245.0

18:20   30.17   79.01   12.73   105.92
18:20    7.83   11.24    12.1    240.5

18:21   32.09   77.01   12.26   102.23
18:21    8.35   10.75    11.5    231.9

18:22   41.75   65.37   10.87    97.42
18:22   10.93    8.09     9.9    220.8

18:23   32.79   76.14   11.76    87.52
18:23    8.53   10.54    11.0    197.9

18:24   25.85   83.34   12.70    77.48
18:24    6.68   12.35    12.1    174.7

18:25   22.64   86.27   12.98    93.24
18:25    5.81   13.13    12.4    211.2

18:26   24.68   84.26   12.84   106.10
18:26    6.36   12.59    12.2    240.9

18:27   30.12   78.98   12.24   109.31
18:27    7.82   11.23    11.5    248.3

18:28   30.35   78.72   11.87   104.88
18:28    7.88   11.17    11.1    238.1

19:29   33.39   75.53   11.57    96.20
18:29    8.69   10.39    10.7    218.0

18:30   39.04   68.84   10.63    90.68
18:30   10.21    8.84     9.6    205.2

18:31   31.99   76.79   11.60    82.75
18:31    8.32   10.70    10.8    186.9

18:32   25.21   82.45   12.31    73.01
18:32    6.50   12.12    11.6    164.4

18:33   22.87   84.29   12.51    87.52
18:33    5.88   12.60    11.8    197.9

18:34   27.41   79.32   12.11    99.84
18:34    7.09   11.32    11.4    226.4

18:35   33.12   72.80   11.47   102.58
18:35    8.62    9.74    10.6    232.7

18:36   43.08   59.05   10.11    95.18
18:36   11.29    6.80     9.0    215.7

18:37   51.23   45.80    8.97    85.04
18:37   13.47    4.45     7.7    192.2

18:38   53.70   40.85    8.78    59.05
18:38   14.13    3.70     7.4    132.1

18:39   47.21   52.48   10.22    46.38
18:39   12.39    5.57     9.1    102.8

18:40   46.22   53.92   11.17    43.19
18:40   12.13    5.83    10.3     95.4

18:41   47.81   51.01   11.98    56.88
18:41   12.55    5.32    11.2    127.1

18:42   49.82   47.09   12.41    58.22
18:42   13.09    4.66    11.7    130.2
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18:43   54.22   38.35   12.02    55.10
18:43   14.27    3.34    11.3    123.0

18:44   56.72   32.76   11.42    49.11
18:44   14.94    2.60    10.6    109.1

18:45   57.01   31.62   10.92    38.70
18:45   15.02    2.46    10.0     85.0

18:46   57.74   29.58   10.27    31.74
18:46   15.21    2.22     9.2     68.9

18:47   57.34   30.44    9.85    30.38
18:47   15.11    2.32     8.7     65.8

18:48   57.13   30.35    9.47    29.01
18:48   15.05    2.31     8.3     62.6

18:49   57.29   29.73    9.13    28.97
18:49   15.09    2.24     7.9     62.5

18:50   57.30   29.57    8.89    29.28
18:50   15.10    2.22     7.6     63.2

18:51   57.36   29.12    8.77    28.45
18:51   15.11    2.17     7.4     61.3

18:52   58.73   25.56    8.27    28.76
18:52   15.48    1.78     6.9     62.0

18:53   59.17   24.37    7.89    27.20
18:53   15.60    1.66     5.4     58.4

18:54   59.42   23.57    7.61    24.69
18:54   15.66    1.58     6.1     52.6

18:55   59.87   22.39    7.29    23.52
18:55   15.78    1.47     5.7     49.9

18:56   60.51   20.28    6.79    22.49
18:56   15.96    1.27     5.1     47.5

18:57   59.74   21.17    6.39    20.62
18:57   15.75    1.35     4.6     43.2

18:58   58.89   22.45    6.14    18.30
18:58   15.52    1.47     4.3     37.8

18:59   58.54   22.83    5.95    19.47
18:59   15.43    1.51     4.1     40.5

19:00   58.02   23.60    5.88    21.00
19:00   15.29    1.58     4.0     44.1

19:01   57.83   23.87    5.71    22.28
19:01   15.24    1.61     3.8     47.0

19:02   57.80   23.85    5.55    23.29
19:02   15.23    1.61     3.6     49.4

19:03   57.49   24.32    5.41    23.73
19:03   15.14    1.66     3.5     50.4

19:04   57.32   24.47    5.32    24.17
19:04   15.10    1.67     3.4     51.4

19:05   57.37   24.33    5.28    24.61
19:05   15.11    1.66     3.3     52.4

19:06   57.15   24.62    5.31    24.93
19:06   15.05    1.69     3.4     53.2

19:07   56.92   24.89    5.23    25.04
19:07   14.99    1.71     3.3     53.4

19:08   57.07   24.57    5.20    25.67
19:08   15.03    1.68     3.2     54.9

19:09   56.70   25.13    5.21    25.84
19:09   14.94    1.74     3.3     55.3

19:10   56.43   25.58    5.23    25.89
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19:10  14.86    1.79     3.3   55.4

19:11  56.29   25.77    5.26  26.30
19:11  14.82    1.81     3.3   56.4

19:12  55.99   26.11    5.43  26.73
19:12  14.74    1.84     3.5   57.3

19:13  55.98   26.12    5.23  27.28
19:13  14.74    1.84     3.3   58.6

19:14  56.07   25.94    5.18  27.74
19:14  14.77    1.82     3.2   59.7

19:15  55.88   26.21    5.25  27.76
19:15  14.72    1.85     3.3   59.7

19:16  55.80   26.29    5.20  27.88
19:16  14.69    1.86     3.2   60.0

19:38  56.73   24.89    4.83  28.70
19:38  14.94    1.71     2.8   61.9
19:40          40.83  80.95    2.84  24.70
19:41          40.74  81.89    2.69  24.34
19:42          40.69  82.01    2.59   3.83
19:43          40.72  81.98    2.53   1.43
19:43FINAL SPAN
 0   O2  40.72     12.09
 1  CO2  81.98     12.00
19:44           8.68  20.49    2.45   1.33
19:45           1.64   3.94    2.46   1.28
19:46           0.59   1.47    2.46   1.25
19:47           0.47   1.29    2.43   1.23
19:48           0.43   1.21    2.42   1.21
19:49           0.41   1.19    2.37   1.20
19:50           0.40   1.13    2.37   1.22
19:51           0.37   1.13    2.39   1.25
19:52           0.36   1.08    2.31   1.20
19:52FINAL ZERO
 0   O2   0.36
 1  CO2   1.08
 2  SO2   2.31
 3  NOx   1.20
20:01           0.33   1.18    5.43  48.53
20:02           0.30   1.10    5.48  48.92
20:03           0.32   1.09    5.50  49.02
20:04           0.32   1.15    5.48  49.04
20:04FINAL SPAN
 3  NOx  49.04   107.80
20:10           0.28   0.99  59.07    1.59
20:11           0.26   1.04  61.65    1.44
20:12           0.26   1.02  64.26    1.14
20:13           0.27   1.03  66.37    0.09
20:14           0.29   1.04  68.19    0.07
20:15           0.27   1.00  68.43    0.08
20:16           0.26   1.07  69.14    0.12
20:17           0.25   1.02  69.92    0.07
20:18           0.27   1.04  70.54    0.10
20:19           0.26   1.08  71.09    0.09
20:20           0.26   1.04  71.50    0.10
20:21           0.24   1.01  71.94    0.07
20:22           0.25   1.04  72.35    0.10
20:23           0.26   1.01  72.60    0.08
20:24           0.24   1.00  72.98    0.11
20:25           0.22   1.04  71.91    0.11
20:26           0.24   0.98  72.42    0.11
20:27           0.23   1.00  73.30    0.09
20:28           0.22   0.95  73.81    0.09
20:29           0.21   0.94  74.18    0.09
20:30           0.24   0.99  74.51    0.09
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20:31           0.23   0.96  74.80    0.11
20:32           0.23   1.06  75.06    0.10
20:33           0.21   0.94  75.26    0.10
20:34           0.21   1.02  75.46    0.10
20:35           0.21   0.99  75.69    0.12
20:36           0.21   0.91  75.93    0.11
20:37           0.20   0.94  76.12    0.10
20:38           0.20   0.98  76.35    0.09
20:39           0.20   0.95  76.45    0.07
20:40           0.20   0.95  76.43    0.10
20:41           0.21   0.96  76.57    0.09
20:42           0.20   0.93  76.79    0.11
20:43           0.22   0.99  76.93    0.08
20:44           0.20   0.86  77.09    0.06
20:45           0.22   0.96  77.19    0.10
20:46           0.19   0.94  77.31    0.10
20:47           0.21   1.00  77.46    0.12
20:48           0.21   1.01  77.60    0.08
20:49           0.21   0.98  77.76    0.09
20:50           0.21   1.00  77.86    0.08
20:51           0.21   1.05  77.97    0.08
20:52           0.20   0.95  78.06    0.07
20:53           0.20   0.92  78.15    0.08
20:53FINAL SPAN
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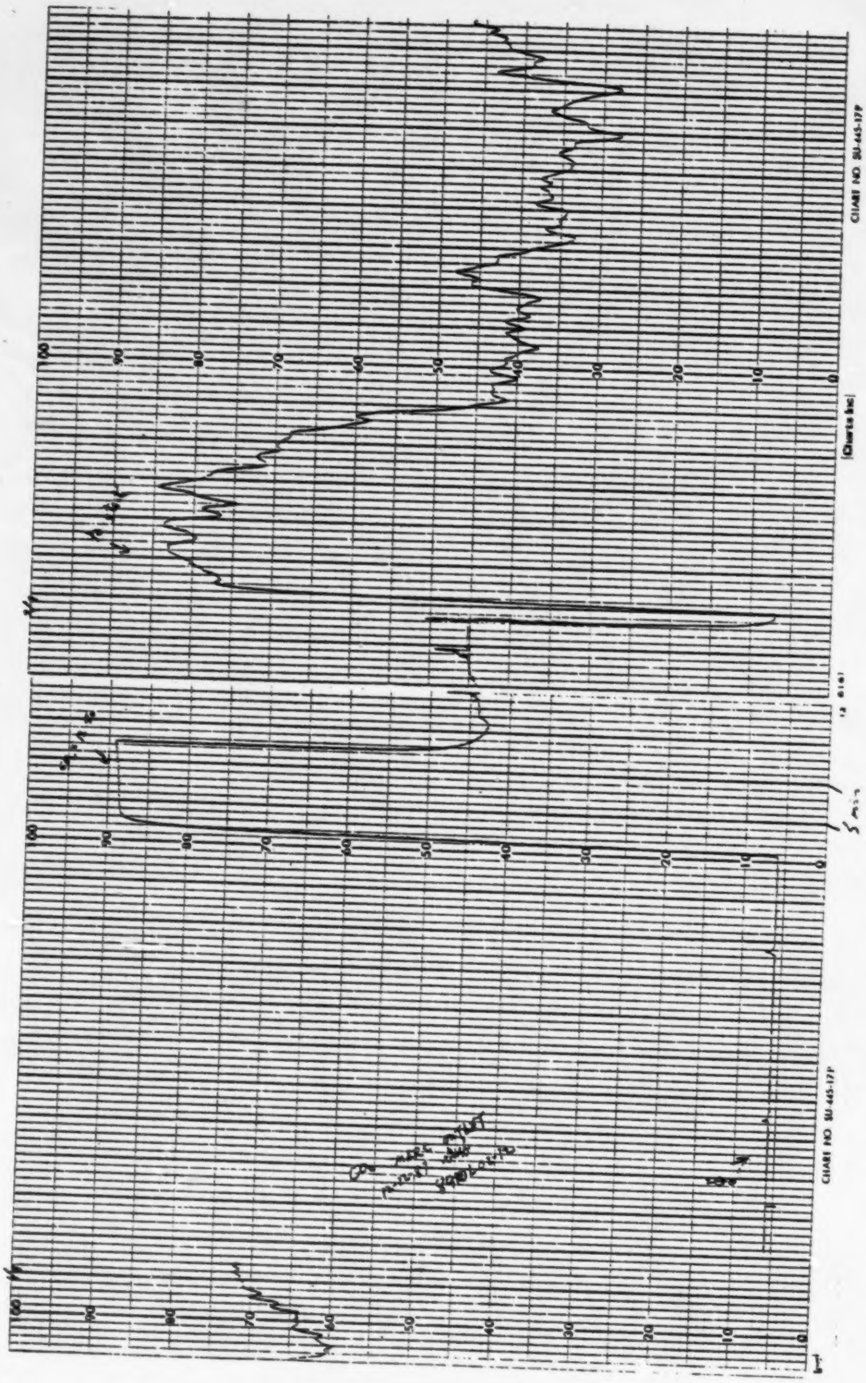

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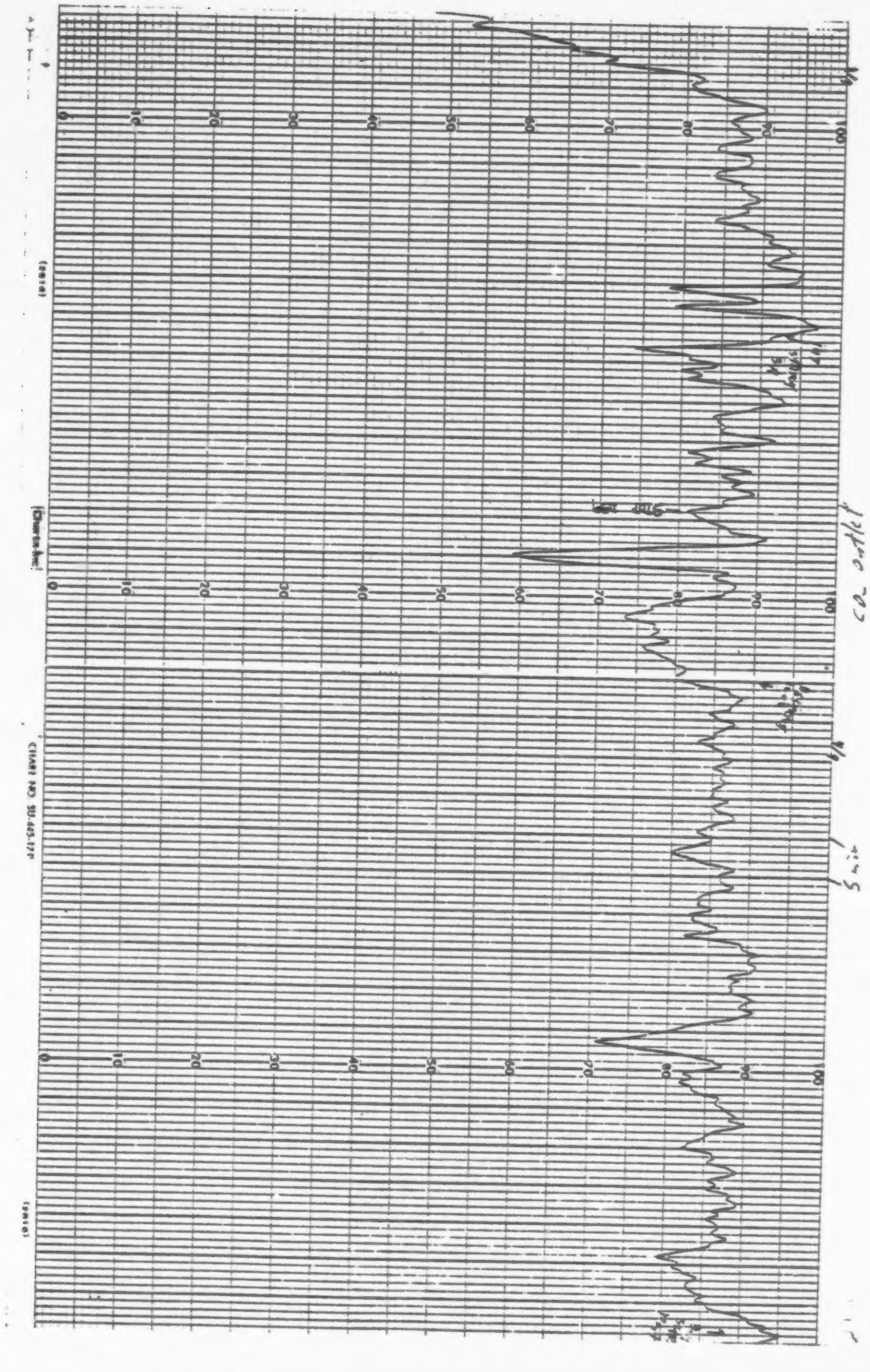
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CO outlet
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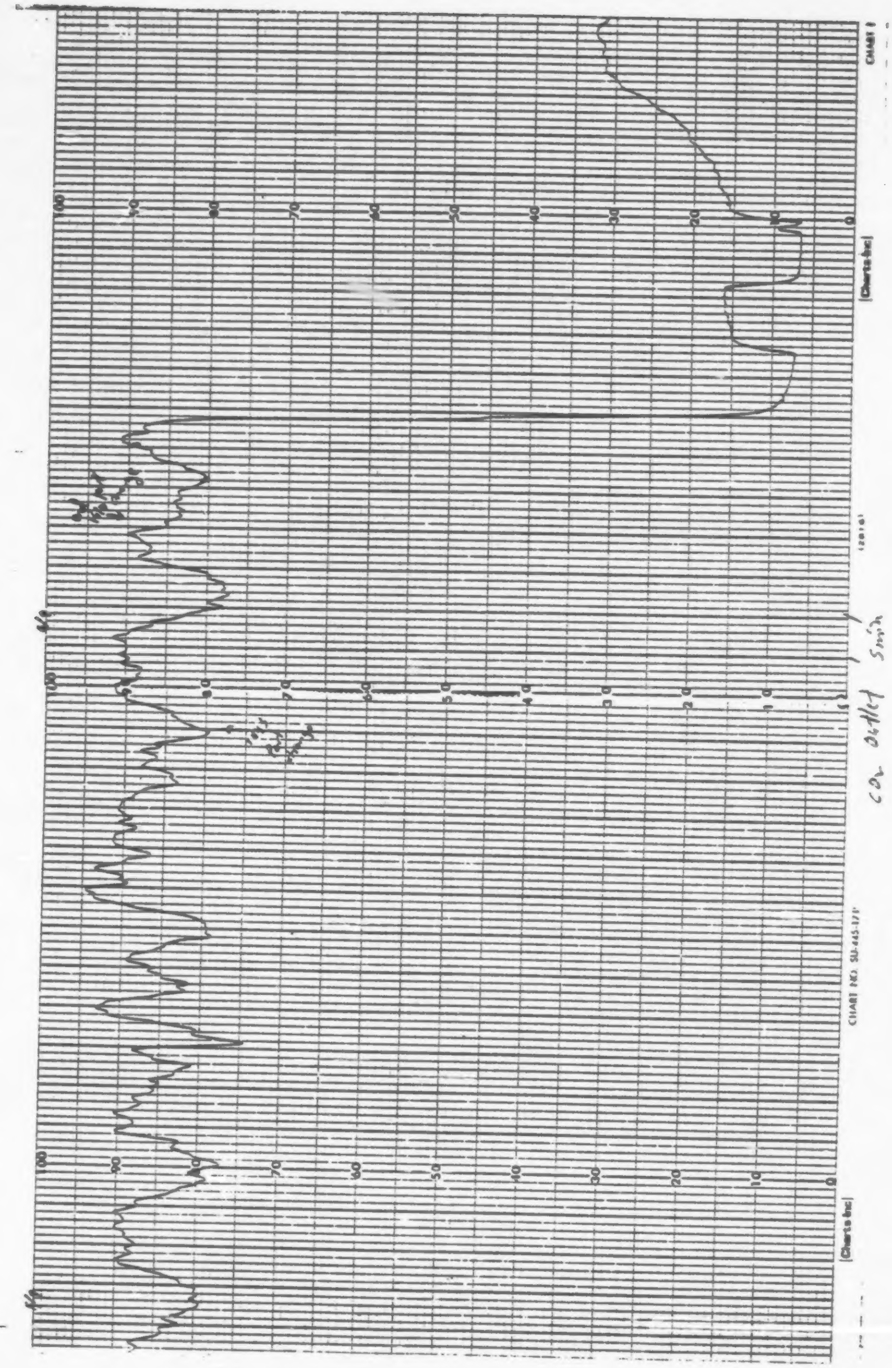
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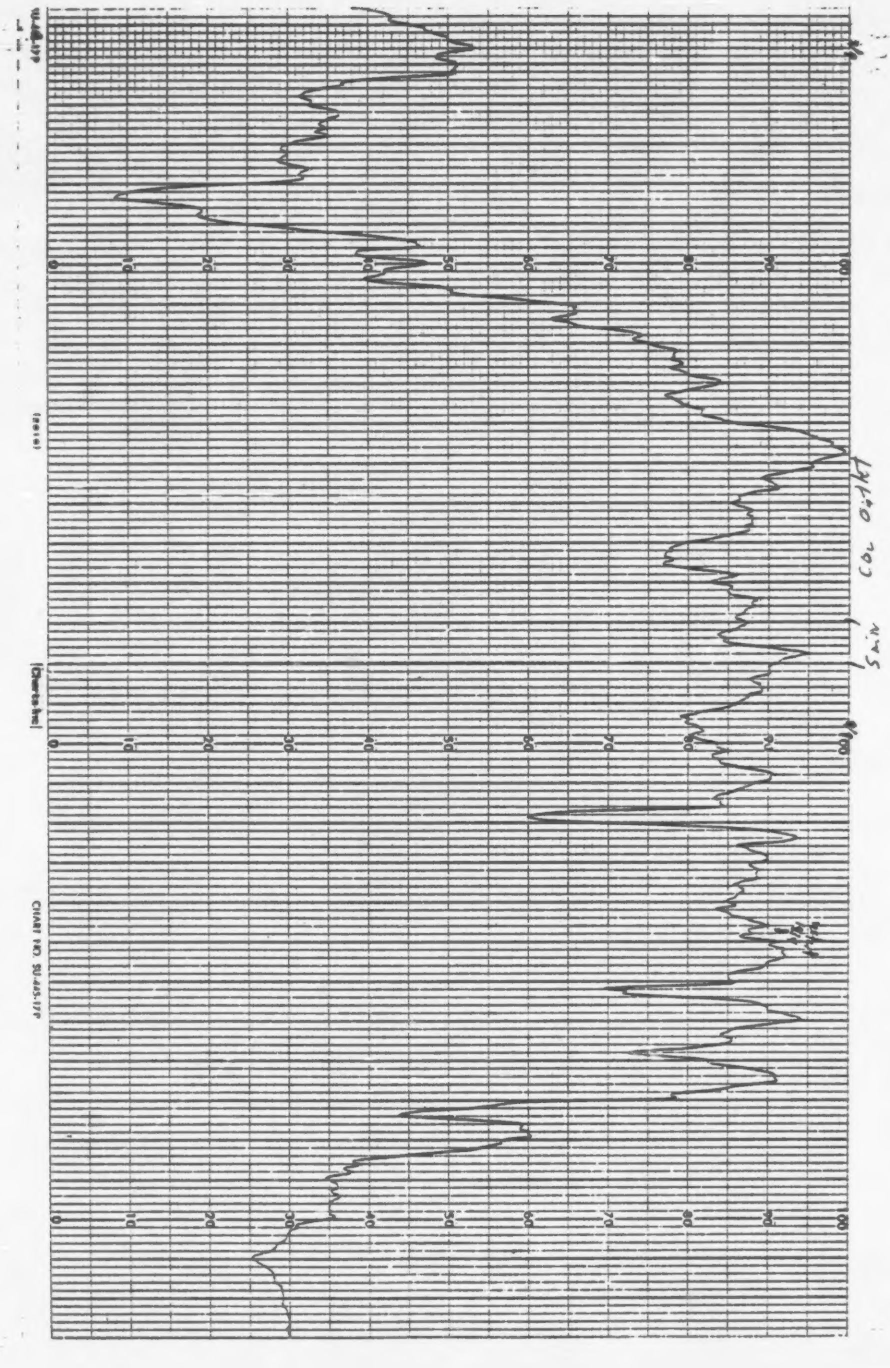
CO2 Outlet Smith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20
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40
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60
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80
90
100
Into col
5 min
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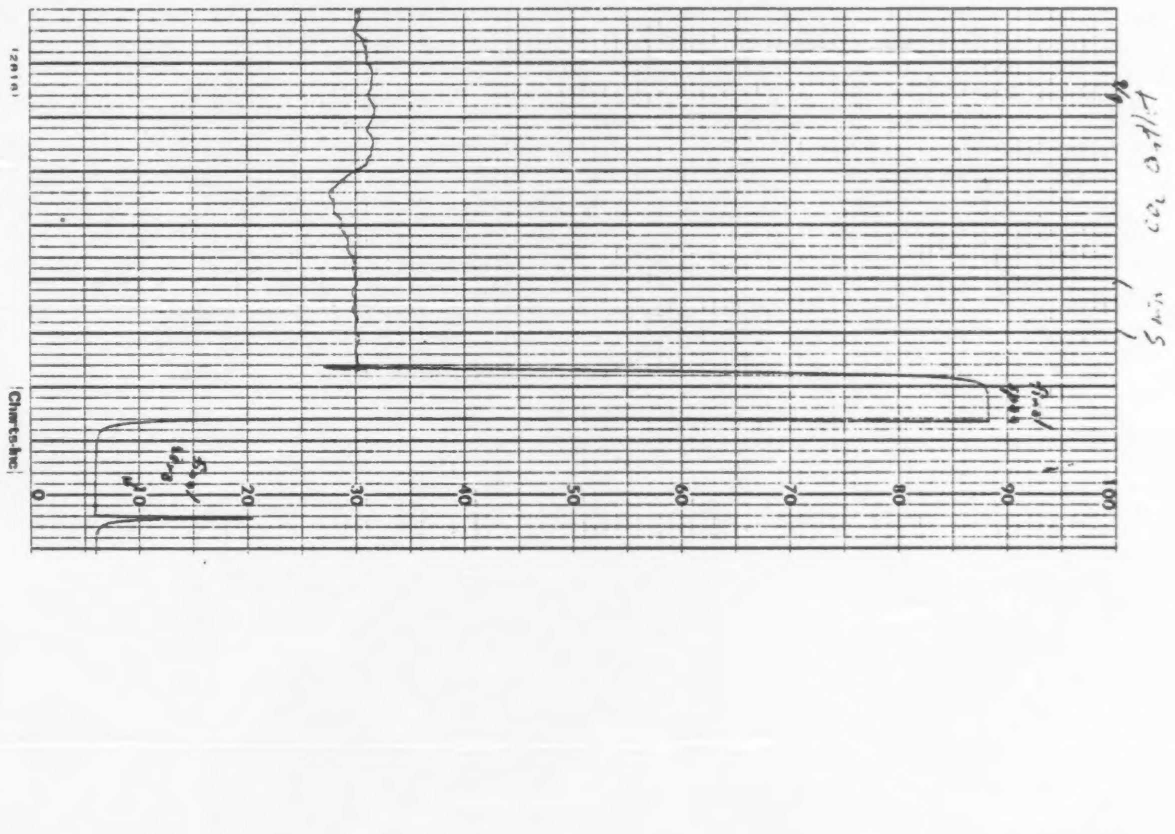

(2818)
Charts-Inc
0
10
20
30
40
50
60
70
80
90
100
Final zero
Final span
5 min
CO2 Drift

CHART NO. BH2-01-25-30M
Chart-tec
CHART NO. BH2-01-25-30M
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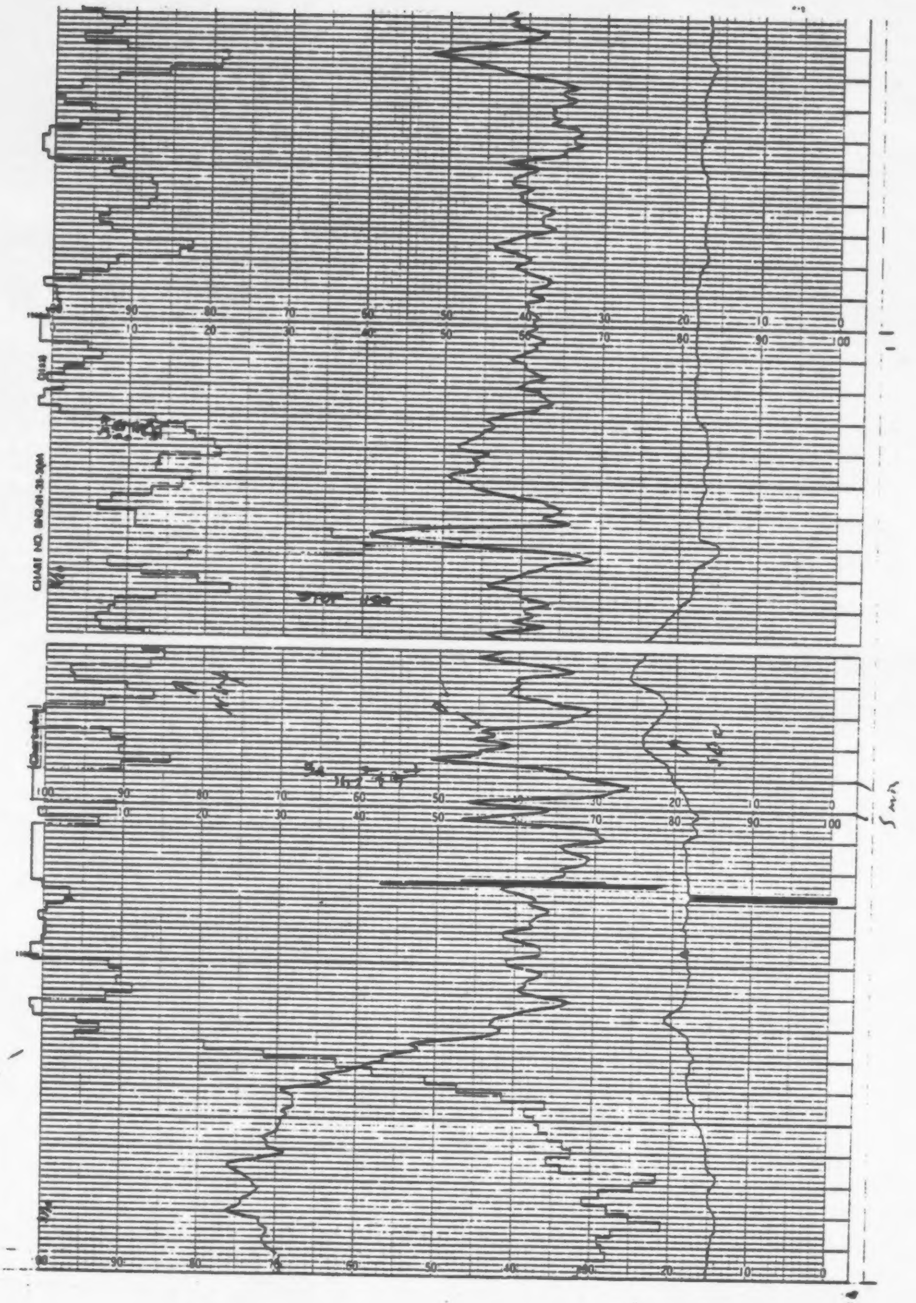
10
20
30
40
50
60
70
80
90
100
5 min

CHART NO. BRD-01-35-3904
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80
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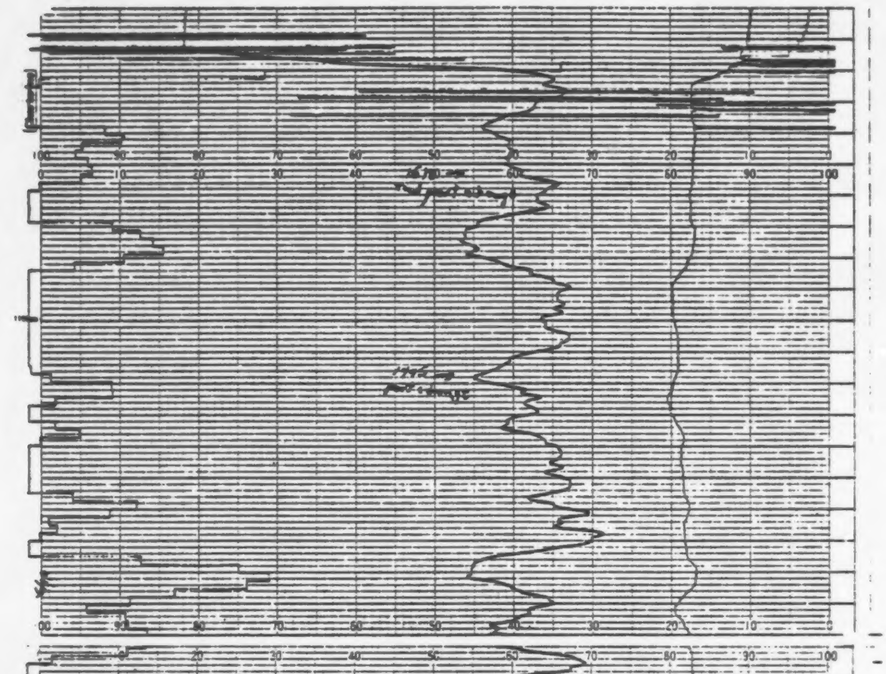
5 min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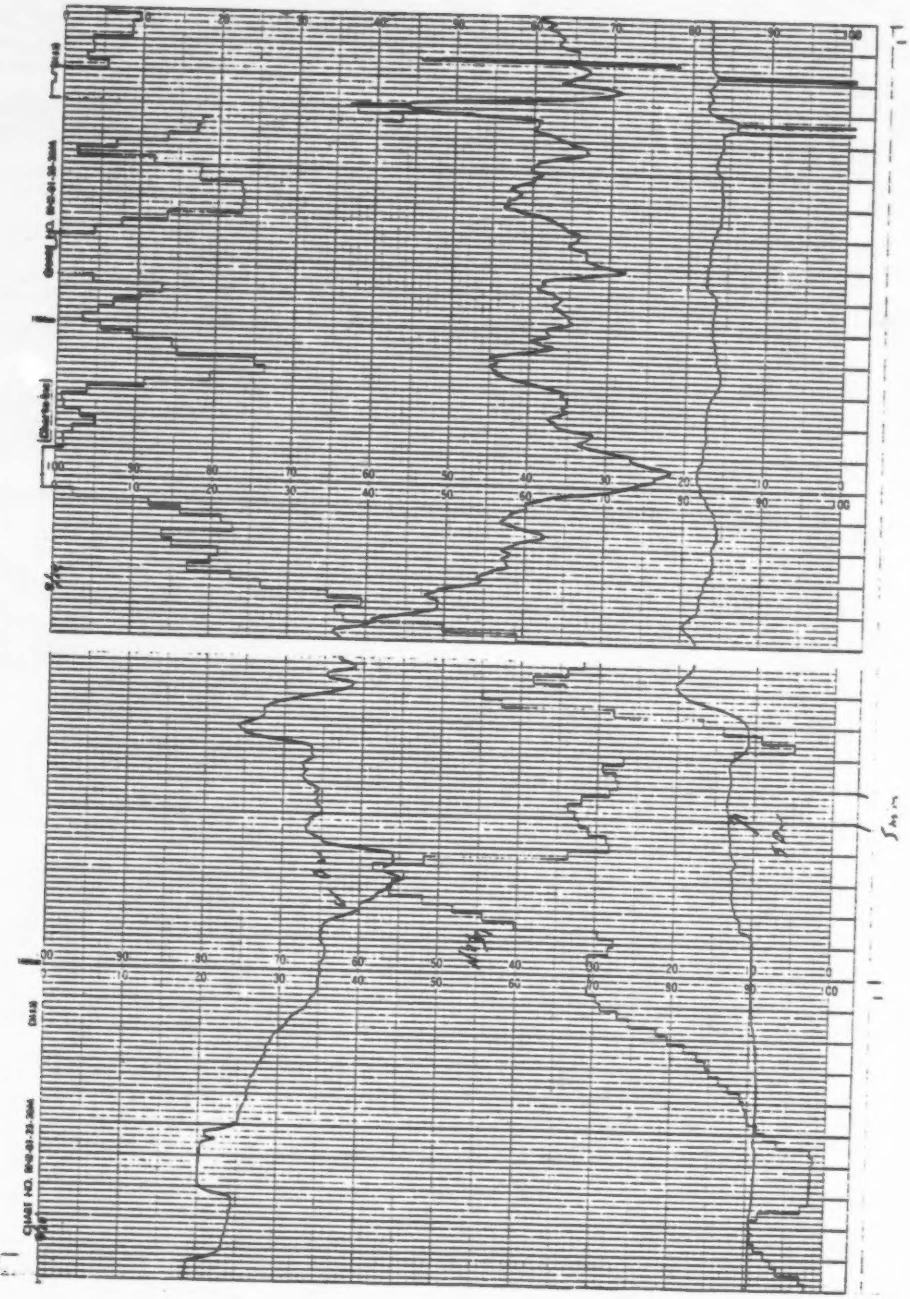
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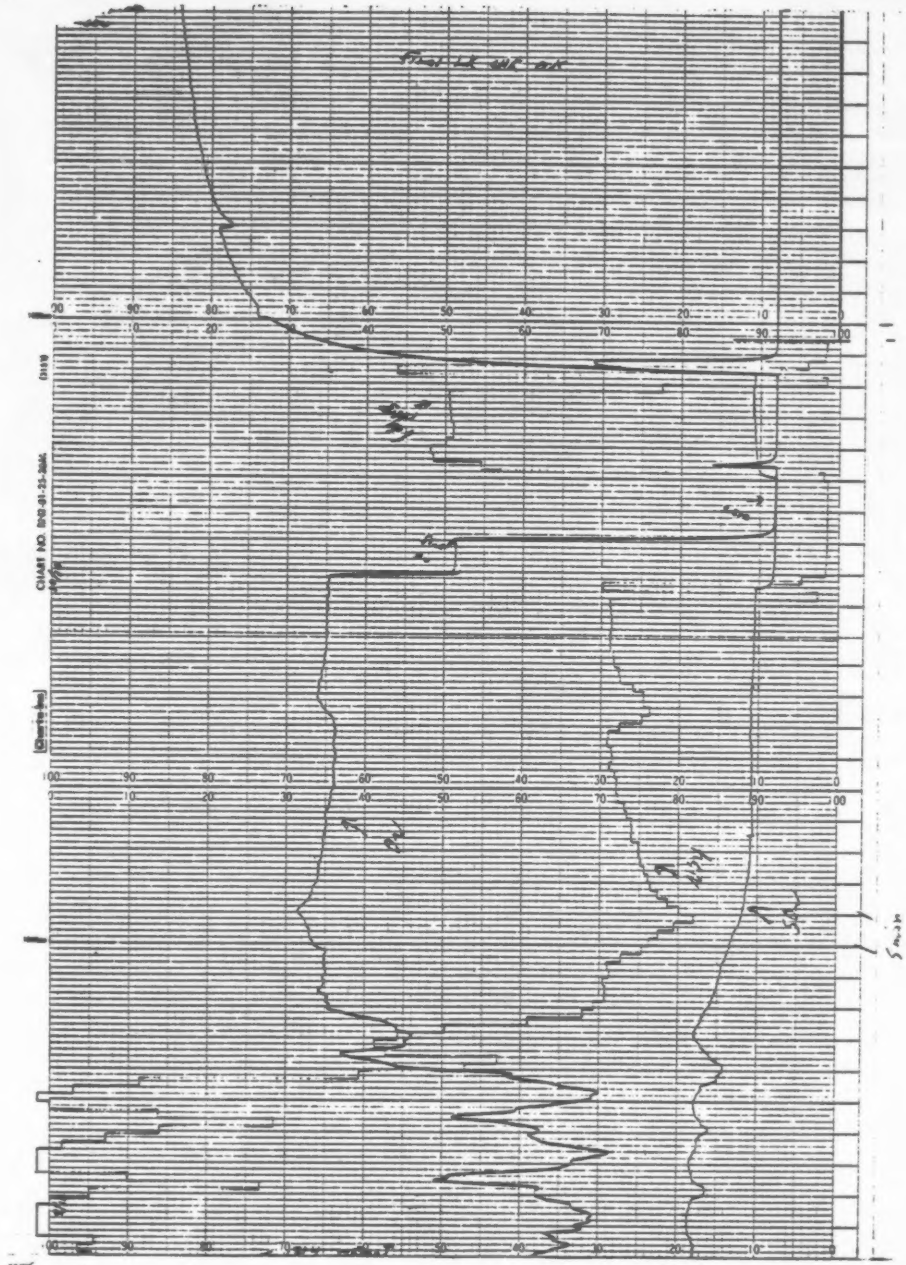

CHART NO.
100
90
80
70
60
50
40
30
20
10
0
5 min

MR3AOUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1116	11.27	5.55	13.88	13.1	227.1
1117	11.28	7.03	12.82	13.9	239.1
1118	11.30	8.77	11.42	15.1	239.0
1119	11.32	11.41	9.20	15.4	237.0
1120	11.33	10.06	10.37	16.0	204.2
1121	11.35	9.67	10.66	17.7	186.3
1122	11.37	10.03	10.32	19.1	195.4
1123	11.38	9.07	11.10	19.6	196.9
1124	11.40	7.20	12.61	19.0	199.9
1125	11.42	6.55	13.11	17.9	217.2
1126	11.43	7.55	12.40	16.9	223.6
1127	11.45	9.01	11.20	16.0	220.6
1128	11.47	9.07	11.15	16.1	206.7
1129	11.48	8.92	11.27	17.2	192.4
1130	11.50	7.47	12.46	19.7	193.8
1131	11.52	8.41	11.75	21.4	206.3
1132	11.53	10.00	10.47	21.0	211.8
1133	11.55	9.83	10.66	20.1	197.1
1134	11.57	8.78	11.58	19.1	186.8
1135	11.58	8.94	11.45	18.0	189.6
1136	11.60	8.67	11.69	16.8	199.4
1137	11.62	8.22	12.03	15.8	204.9
1138	11.63	8.85	11.45	14.7	203.1
1139	11.65	9.41	10.92	13.6	200.6
1140	11.67				
1159	11.98				
1200	12.00	10.08	10.16	10.5	174.4
1201	12.02	9.64	10.54	10.8	179.2
1202	12.03	8.42	11.58	11.8	183.5
1203	12.05	8.06	11.90	12.5	196.4
1204	12.07	8.48	11.57	12.6	219.1
1205	12.08	8.97	11.16	12.5	225.1
1206	12.10	8.37	11.67	12.6	219.7
1207	12.12	8.80	11.29	12.5	216.5
1208	12.13	9.21	10.91	12.3	219.5
1209	12.15	8.95	11.14	11.9	214.5
1210	12.17	8.50	11.51	12.1	209.0
1211	12.18	8.47	11.57	12.6	205.2
1212	12.20	8.68	11.38	12.5	211.2
1213	12.22	8.59	11.46	12.4	226.0
1214	12.23	8.66	11.39	12.3	228.5
1215	12.25	8.86	11.18	12.1	222.3
1216	12.27	8.49	11.49	12.3	219.9
1217	12.28	8.70	11.30	12.4	216.9
1218	12.30	8.11	11.80	12.6	218.1
1219	12.32	8.69	11.30	12.5	218.5
1220	12.33	9.21	10.86	12.0	221.4
1221	12.35	8.87	11.10	11.8	210.8
1222	12.37	9.61	10.45	11.2	203.1
1223	12.38	9.87	10.21	10.6	200.5
1224	12.40	8.90	11.03	11.0	183.2
1225	12.42	8.12	11.69	11.3	179.5

MR3AOUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1226	12.43	8.36	11.50	11.3	196.6
1227	12.45	8.08	11.74	11.2	202.6
1228	12.47	8.89	11.03	10.8	206.2
1229	12.48	9.17	10.81	10.8	203.3
1230	12.50	8.97	11.01	10.8	192.6
1231	12.52	9.42	10.64	10.7	190.4
1232	12.53	8.85	11.17	11.0	190.1
1233	12.55	9.15	10.87	11.1	191.5
1234	12.57	8.26	11.65	11.6	201.9
1235	12.58	7.42	12.35	12.1	199.7
1236	12.60	7.21	12.50	12.2	218.0
1237	12.62	7.11	12.58	12.1	227.7
1238	12.63	7.66	12.13	11.8	224.2
1239	12.65	7.92	11.94	11.2	221.1
1240	12.67	8.04	11.86	11.2	213.4
1241	12.68	7.42	12.38	11.5	203.2
1242	12.70	7.62	12.24	11.6	207.5
1243	12.72	7.39	12.41	11.7	215.1
1244	12.73	8.49	11.49	11.2	218.7
1245	12.75	9.79	10.35	10.7	213.4
1246	12.77	10.86	9.38	10.3	203.5
1247	12.78	12.03	8.29	9.7	190.4
1248	12.80	10.74	9.47	10.2	176.4
1249	12.82	8.94	11.06	11.0	170.8
1250	12.83	8.55	11.40	11.1	189.8
1251	12.85	9.42	10.63	10.7	207.2
1252	12.87	9.59	10.49	10.6	206.1
1253	12.88	9.24	10.79	10.8	201.0
1254	12.90	8.49	11.43	10.9	204.0
1255	12.92	8.30	11.61	11.0	210.1
1256	12.93	7.88	11.98	11.2	212.7
1257	12.95	7.71	12.12	11.3	213.9
1258	12.97	8.02	11.85	11.1	216.7
1259	12.98	8.87	11.15	11.0	217.1
1300	13.00	9.39	10.68	10.8	211.9
1301	13.02	9.03	11.03	10.9	207.4
1302	13.03	8.65	11.37	11.3	205.5
1303	13.05	8.15	11.80	11.5	210.4
1304	13.07	8.06	11.91	11.6	218.5
1305	13.08	8.65	11.44	11.4	221.4
1306	13.10	8.56	11.50	11.5	216.5
1307	13.12	8.00	11.98	11.6	212.8
1308	13.13	7.87	12.07	11.6	218.1
1309	13.15	8.47	11.53	11.6	222.7
1310	13.17	8.55	11.42	11.5	224.0
1311	13.18	8.38	11.55	11.4	222.5
1312	13.20	8.18	11.72	11.4	219.7
1313	13.22	8.63	11.34	11.0	218.7
1314	13.23	9.73	10.40	10.6	216.3
1315	13.25	10.10	10.11	10.3	207.2
1316	13.27	9.79	10.39	10.4	198.9
1317	13.28	9.31	10.84	10.4	194.8
1318	13.30	9.40	10.72	10.4	199.4

MR3AOUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1319	13.32	9.18	10.90	10.5	202.3
1320	13.33	9.00	11.07	10.5	205.2
1321	13.35	8.56	11.42	10.7	207.4
1322	13.37	7.41	12.38	11.2	207.4
1323	13.38	6.69	12.97	11.6	216.2
1324	13.40	6.12	13.38	11.7	229.1
1325	13.42	6.17	13.32	11.7	235.9
1326	13.43	7.10	12.59	11.7	236.5
1327	13.45	8.02	11.86	11.5	231.1
1328	13.47	8.08	11.81	11.3	227.7
1329	13.48	8.74	11.24	11.0	220.5
1330	13.50	9.14	10.91	10.7	217.4
1331	13.52	9.43	10.68	10.7	209.0
1332	13.53	9.67	10.47	10.4	205.7
1333	13.55	10.24	9.97	10.0	207.3
1334	13.57	10.16	10.02	9.7	197.2
1335	13.58	10.18	9.98	9.8	189.0
1336	13.60	9.72	10.41	9.8	185.5
1337	13.62	9.04	11.00	10.1	191.8
1338	13.63	7.87	11.96	10.7	192.6
1339	13.65	7.55	12.23	11.0	204.4
1340	13.67	7.81	12.02	10.9	224.1
1341	13.68	7.97	11.90	11.1	225.2
1342	13.70	7.67	12.14	11.5	222.6
1343	13.72	7.37	12.39	11.7	227.6
1344	13.73	7.59	12.20	11.9	233.9
1345	13.75	7.57	12.22	12.2	233.9
1346	13.77	8.14	11.76	11.9	239.5
1347	13.78	8.91	11.09	11.7	237.1
1348	13.80	9.64	10.44	11.5	226.9
1349	13.82	10.31	9.85	10.8	222.7
1350	13.83	10.08	10.08	10.7	208.8
1351	13.85	10.69	9.51	10.4	193.5
1352	13.87	10.13	10.01	10.3	195.2
1353	13.88	9.48	10.59	10.5	189.8
1354	13.90	9.10	10.95	10.6	198.1
1355	13.92	7.53	12.30	11.1	204.7
1356	13.93	7.97	11.96	10.9	215.5
1357	13.95	7.50	12.36	10.8	221.5
1358	13.97	8.08	11.86	10.4	219.2
1359	13.98	8.10	11.85	10.4	213.2
1400	14.00	8.64	11.36	10.1	202.6
1401	14.02	8.68	11.29	10.0	197.3
1402	14.03	9.19	10.85	9.7	192.6
1403	14.05	9.73	10.43	9.4	189.1
1404	14.07	8.78	11.25	9.6	181.0
1405	14.08	8.09	11.75	9.9	179.5
1406	14.10	10.54	9.60	8.9	188.3
1407	14.12	10.36	9.83	8.9	184.5
1408	14.13	9.73	10.40	9.3	169.1
1409	14.15	7.79	12.06	10.4	171.1
1410	14.17	6.59	12.98	11.1	191.3
1411	14.18	6.87	12.79	11.3	218.5

MR3AOUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1412	14.20	8.58	11.38	11.3	230.3
1413	14.22	9.60	10.55	11.3	222.1
1414	14.23	9.35	10.78	11.9	203.4
1415	14.25	8.55	11.41	12.7	191.2
1416	14.27	8.02	11.84	13.4	192.0
1417	14.28	7.76	12.05	14.1	195.0
1418	14.30	8.79	11.26	13.4	201.4
1419	14.32	9.49	10.69	12.5	199.9
1420	14.33	10.51	9.83	11.1	187.4
1421	14.35	10.41	9.87	10.6	171.7
1422	14.37	9.99	10.23	10.5	157.9
1423	14.38	8.34	11.64	11.4	158.4
1424	14.40	6.55	13.08	12.3	175.1
1425	14.42	5.96	13.48	12.5	204.9
1426	14.43	7.05	12.64	12.5	226.2
1427	14.45	7.24	12.54	12.7	225.3
1428	14.47	6.51	13.13	12.7	217.5
1429	14.48	7.60	12.31	12.1	215.5
1430	14.50	8.21	11.76	11.7	210.9
1431	14.52	7.11	12.62	12.1	196.8
1432	14.53	7.00	12.69	12.7	197.9
1433	14.55	7.64	12.19	12.8	217.0
1434	14.57	7.44	12.37	12.9	233.9
1435	14.58	7.30	12.51	13.1	239.5
1436	14.60	7.33	12.52	13.2	241.8
1437	14.62	7.83	12.11	13.1	243.2
1438	14.63	8.48	11.56	12.9	242.3
1439	14.65	9.26	10.89	12.7	229.8
1440	14.67	8.92	11.16	13.3	216.6
1441	14.68	8.18	11.76	14.0	209.7
1442	14.70	8.45	11.55	14.6	216.9
1443	14.72	8.37	11.59	15.0	224.8
1444	14.73	9.10	10.95	15.2	224.8
1445	14.75	10.22	10.00	14.4	212.6
1446	14.77	9.73	10.44	14.0	198.7
1447	14.78	9.17	10.93	13.6	201.4
1448	14.80	8.64	11.35	13.3	217.3
1449	14.82	7.46	12.33	13.4	223.4
1450	14.83	7.01	12.72	13.4	235.1
1451	14.85	7.39	12.39	13.4	247.0
1452	14.87	7.85	12.02	13.6	246.7
1453	14.88	7.64	12.20	13.9	238.1
1454	14.90	7.34	12.45	14.2	241.2
1455	14.92	7.30	12.45	14.3	245.2
1456	14.93	7.27	12.51	14.2	252.4
1457	14.95	7.22	12.57	14.4	244.0
1458	14.97	7.98	11.92	14.4	245.1
1459	14.98	8.73	11.29	13.7	245.3
1500	15.00	9.70	10.40	12.7	239.9
1501	15.02	10.40	9.75	11.8	224.9
1502	15.03	10.53	9.63	11.3	210.1
1503	15.05	10.68	9.50	10.9	196.1
1504	15.07	10.47	9.70	10.7	185.2

MR3AOUT

TIME		O2 (%)	CO2 (%)	SO2 (ppm)	NOx (ppm)
1505	15.08	10.03	10.06	10.6	187.2
1506	15.10	8.75	11.19	11.2	190.8
1507	15.12	7.83	11.95	11.5	198.3
1508	15.13	8.08	11.72	11.4	221.7
1509	15.15	7.71	12.02	11.6	222.6
1510	15.17	7.59	12.14	11.6	224.6
1511	15.18	8.61	11.28	11.2	231.6
1512	15.20	9.04	10.89	11.0	221.6
1513	15.22	9.10	10.85	11.0	209.8
1514	15.23	9.03	10.91	11.0	204.9
1515	15.25	9.11	10.83	11.1	205.6
1516	15.27	9.63	10.35	10.8	208.6
1517	15.28	9.96	10.07	10.5	207.6
1518	15.30	9.31	10.57	9.5	198.6
1519	15.32	8.49	11.40	10.5	199.7
1520	15.33	8.08	11.76	11.4	216.3
1521	15.35	6.98	12.45	7.8	229.5
1522	15.37	7.27	12.35	10.7	234.3
1523	15.38	7.59	11.91	11.4	239.5
1524	15.40	8.76	10.81	10.9	234.1
1525	15.42	14.19	5.19	8.0	223.0
1526	15.43	17.99	1.88	2.6	178.1
1527	15.45				
1814	18.23				
1815	18.25	7.70	11.80	11.9	208.9
1816	18.27	6.80	12.60	12.5	209.3
1817	18.28	6.42	12.93	13.0	213.6
1818	18.30	6.75	12.61	12.9	231.0
1819	18.32	7.42	12.05	12.8	238.9
1820	18.33	8.35	11.24	12.4	234.4
1821	18.35	8.89	10.75	11.9	226.1
1822	18.37	11.62	8.09	10.2	215.3
1823	18.38	9.09	10.54	11.3	193.1
1824	18.40	7.13	12.35	12.4	170.5
1825	18.42	6.22	13.13	12.7	205.9
1826	18.43	6.80	12.59	12.6	234.8
1827	18.45	8.34	11.24	11.8	242.0
1828	18.47	8.40	11.17	11.4	232.1
1829	18.48	9.26	10.39	11.0	212.6
1830	18.50	10.86	8.84	9.9	200.2
1831	18.52	8.86	10.70	11.1	182.4
1832	18.53	6.95	12.12	11.9	160.5
1833	18.55	6.29	12.60	12.2	193.1
1834	18.57	7.57	11.32	11.7	220.8
1835	18.58	9.18	9.74	10.9	226.9
1836	18.60	12.00	6.80	9.3	210.3
Average=		8.62	11.30	12.05	210.53
Min=		5.55	1.88	2.60	157.90
Max=		17.99	13.88	21.40	252.40
Std Dev=		1.33	1.22	2.23	18.42
Variance=		1.76	1.48	4.97	339.21

TABLE OF CONVERSION FACTORS

Multiply English units	By	To obtain SI units
lb/h	4.536×10^{-1}	kg/h
gr/dscf	2.288×10^{9}	ng/dscm
gr/dscf	2.288×10^{3}	mg/dscm
foot	0.3048	meter
inch	2.54	centimeter
tons/day	0.907	mg/day
gallon	3.785	liter
Btu/h	1.05488	MJ/h
ft^3/min	28316.8	cm^3/min
inches H_2O	0.0394	mm H_2O